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The Oil Man's Calendar

FEB.	
7	East Texas Chapter, A.P.I., Kilgore, Texas.
13–16	American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.
23–25	American Society of Mechanical Engineers, New Orleans, Louisiana.
23–25	Louisiana Engineering Society, New Orleans, Louisiana.
25	North Texas Oil and Gas Association, Wichita Falls, Texas.
MAR.	
16–17	Southwestern District, American Petroleum Institute, Division of Production, Plaza Hotel, San Antonio, Texas.
20–22	Western Petroleum Refiners Association, San Antonio, Texas.
22–24	American Association of Petroleum Geologists, Skirvin Hotel, Oklahoma City, Oklahoma.
APR.	
3–7	American Chemical Society, Baltimore, Maryland.
13–14	National Petroleum Association, Cleveland, Ohio.
24–29	Oil-World Exposition, Houston, Texas.
MAY	
3–5	Petroleum Electric Supply Association, Houston, Texas.
3–5	Petroleum Industry Electrical Association, Houston, Texas.
3–5	Natural Gasoline Association of America, Tulsa, Oklahoma.
15–18	American Petroleum Institute, Mid-Year Meeting, New Orleans, Louisiana.
JUNE	
15–16	Pennsylvania Grade Crude Oil Association, Hershey, Pa.

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This Week's Panorama

UNITED STATES crude oil production continues fairly well in line with current requirements, although the output of the fields is so close to what the markets will absorb that very little or no market is left to be supplied from crude storage.

Consequently, any withdrawals from crude storage, such as some of the oil companies are making or would like to make, must entail competition of the storage oil with fresh production for markets.

Apparently, this kind of competition is currently prevalent to some extent.

Crude Storage Withdrawals Prevented

Some of the larger companies have substantial quantities of surplus crude in their tanks that they desire to liquidate, because of the heavy expense and waste in continuing to carry it.

And as long as they have those excess stocks, the market for current production will be comparatively weak.

In December, production was too high to permit withdrawals from crude storage, and the stocks in the United States as a whole were increased 2,000,000 barrels.

In the week ended January 7, the industry took about 700,000 barrels of crude out of storage, cutting the total down to 272,325,000 barrels. But that withdrawal was possible only because of excessive runs of crude to refinery stills.

Similarly, the week ended January 14 probably will show another withdrawal of crude from storage, but only because of a further unjustified increase of refinery runs.

Allowables Higher Than Desirable

It is indicated, consequently, that the present degree of curtailment is hardly enough to permit further substantial withdrawals of surplus crude from storage or to assure strong markets for either crude oil or products.

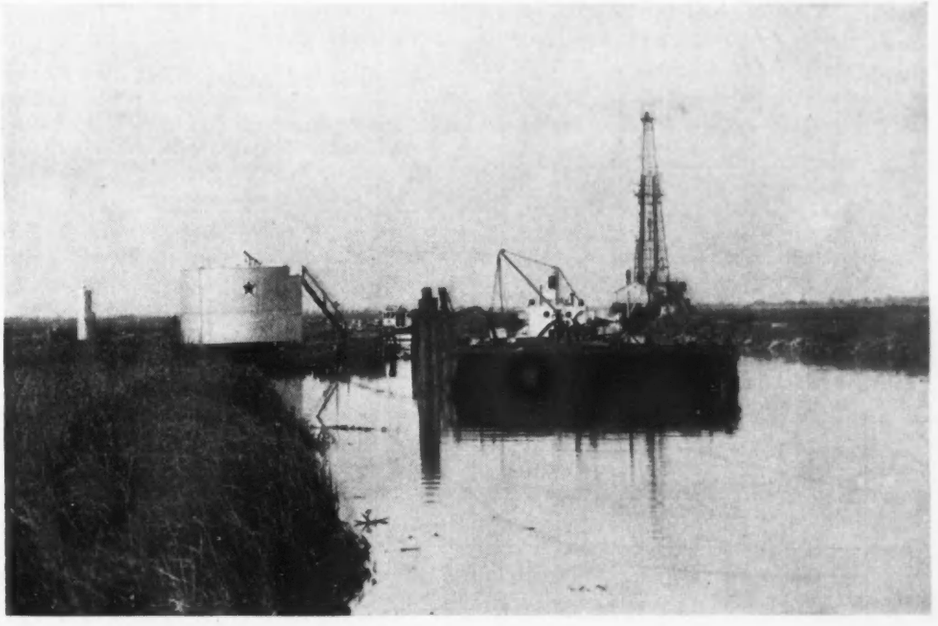
It is indicated further, therefore, that allowables are higher than economically desirable and that they may need revision.

The nation's production of 3,243,600 barrels daily in the week ended January 14 was within 27,000 barrels of the indicated market demand for all domestic crude, as estimated by the Bureau of Mines, which does not suggest what part of the requirements should come from current production and what part from storage.

Obviously, production around the current rate does not assure much opportunity to take crude out of storage.

Crude Stocks Still Above Needs

Although the crude oil stocks of the country recently hit a 17 year low (269,509,000 barrels on



PIPE LINES NOT NEEDED IN COASTAL LOUISIANA

Many oil fields along the Louisiana Gulf Coast have direct and adequate market outlets without requiring investments in pipe lines.

The oil is moved out economically by water, as the area is served by a network of navigable streams and canals.

Highways do not reach some of the remote districts, and all transportation is by water or air.

December 10), they still include large quantities held unwillingly by a considerable number of oil companies.

At the important monthly hearing of the Texas Railroad Commission in December, five integrated companies indicated that they held, in the aggregate, approximately 35,000,000 barrels of surplus crude, as reported in these columns December 19, 1938, page 63; and the total for the whole industry would be larger, as some companies were not represented at the hearing. If these surplus stocks were liquidated, the national total would be brought down below 240,000,000 barrels.

The Bureau of Mines some months ago found in an extensive survey that crude stocks of 200,000,000 to 250,000,000 barrels probably would be adequate. And that conclusion was fairly well confirmed by evidence and testimony brought out at the Texas Railroad Commission hearing.

The industry took about 33,000,000 barrels of crude out of storage in 1938, and apparently, that much more might be withdrawn with beneficial results.

Heavy Refinery Runs Force Gasoline Stocks Up

To far in January, the industry has failed to hold refinery runs down within economic limits, and gasoline stocks have been heading toward excessive levels.

In the week ended January 14 the unfavorable trends were accentuated, as crude runs to still were sharply increased, while another million barrels of gasoline went into storage.

Unless the industry promptly curtails refinery runs, it will enter the spring season this year with about the same amount of gasoline on hand as the market-depressing quantity that it held at the beginning of spring last year.

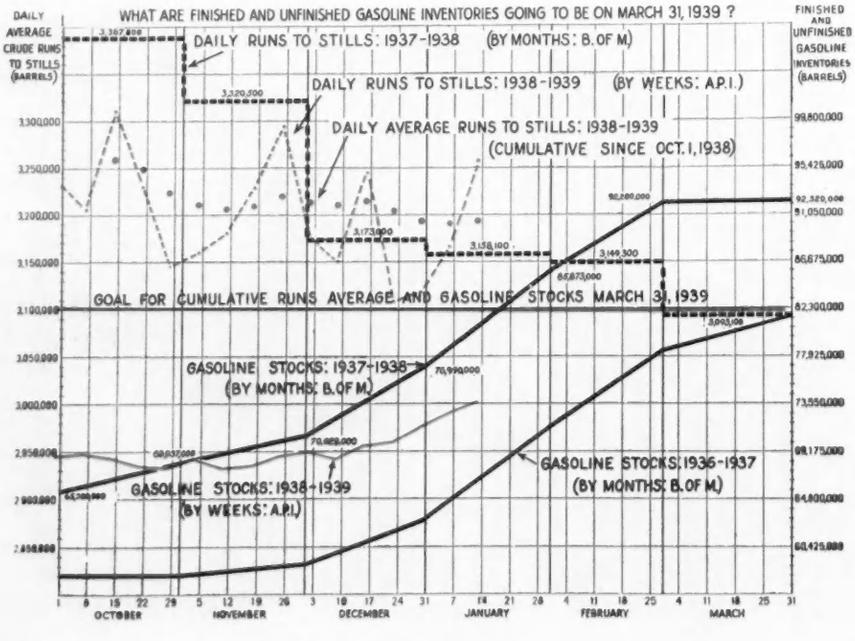
And inasmuch as the surplus last year adversely affected the gasoline market throughout 1938, it is evident that current over-refining is definitely inviting a repetition of gasoline market difficulties in 1939.

It has been estimated that gasoline demand will be around 4 percent larger in 1939 than in 1938, and that the indicated demand could be adequately met if the industry would have in storage approximately 82,300,000 barrels of gasoline on March 31, when the heavy consuming season begins.

And any gasoline in excess of that quantity on that date would represent a surplus, which would adversely affect the market.

If gasoline stocks are to be held near the desirable level of 82,300,000 barrels as of March 31, however, drastic restriction of refinery runs (to about 3,000,000 barrels daily) will be necessary in the remainder of the winter season.

It has been calculated that the holding of gasoline stocks to the desired level for March 31 would require restriction of crude runs to stills to an average of 3,100,000 barrels daily for the whole fall-winter season, from October 1 to March 31.


WHAT ARE FINISHED AND UNFINISHED GASOLINE INVENTORIES GOING TO BE ON MARCH 31, 1939 ?
DAILY AVERAGE CRUDE RUNS TO STILLS (BARRELS)
FINISHED AND UNFINISHED GASOLINE INVENTORIES (BARRELS)
DAILY RUNS TO STILLS: 1937-1938 (BY MONTHS: B. OF M.)
DAILY RUNS TO STILLS: 1938-1939 (BY WEEKS: A.P.I.)
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GOAL FOR CUMULATIVE RUNS AVERAGE AND GASOLINE STOCKS MARCH 31, 1939
GASOLINE STOCKS: 1937-1938 (BY MONTHS: B. OF M.)
GASOLINE STOCKS: 1938-1939 (BY WEEKS: A.P.I.)
GASOLINE STOCKS: 1936-1937 (BY MONTHS: B. OF M.)
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH

But in the first half of that period, the crude runs averaged approximately 3,200,000 barrels daily, and achievement of the 3,100,000 barrel average for the whole period would necessitate holding runs to about 3,000,000 barrels daily in January, February, and March.

The accompanying chart shows in red the trends of refinery runs and gasoline stocks.

In the week ended January 14, crude runs to refinery stills averaged 3,260,000 barrels daily, having jumped up 90,000 barrels from the previous week's daily average, after having shown a 55,000 barrel increase in that preceding week.

At the new rate, the refinery runs were a quarter of a million barrels higher than desirable.

Cumulative runs from October 1 through January 14 averaged 3,198,333 barrels daily, as indicated by the last red dot on the right.

A continuation of runs at that same average level would result in gasoline storage of nearly 91,000,000 barrels as of March 31, as indicated by reading the scale on the right side of the chart. That would be approximately as much as the 92,320,000 barrels of gasoline that was held in storage at the end of March last year.

And further running of around 3,260,000 barrels of crude to stills daily, as in the week ended January 14, would push the gasoline stocks by March 31 to a level even higher than that of over 92,000,000 barrels at the end of March last year.

The million barrel addition to gasoline stocks in the week ended January 14 increased the total on hand to 73,752,000 barrels, or within about 8,000,000 barrels of the economic limit as of March 31, with 11 weeks remaining until that time.

An Analysis of the Petroleum Situation

By FRED VAN COVERN
Director, Department of Statistics, American Petroleum Institute

Preprinted from API Quarterly, January, 1939

AS THE petroleum industry enters 1939, it finds itself in the zone of confusion between a statistical position strong in many respects and a weak economic situation. This condition began to develop in the latter part of 1937 and continued practically throughout 1938. It came about as a result of trends within the industry itself as well as from forces outside of its control. It hardly seems necessary again to relate these developments in detail, so much already has been said and written relative thereto that I shall not repeat it here. Even so, the industry is not far from a basically sound condition. But it is important that all branches quickly realize that the trend of operations during the next two or three months will prove of the utmost significance. How the industry conducts itself during this period will have a very pronounced effect upon its entire economy during the remainder of 1939, and perhaps beyond. It appears at this time, however, that the present somewhat confused state must continue a while longer. How long a period this will ultimately prove to be depends upon whether or not the industry consolidates the gains that could ensue from its present fairly well liquidated position and to what extent gasoline inventories are built up during the present winter season.

Motor Fuel

As this is written, it appears as though the domestic demand for motor fuel during 1938 approximated 521,000,000 barrels, or about three-tenths of 1 percent more than the domestic demand for 1937. Export shipments of motor fuel continued the increases registered in 1937 but not quite to the same extent—the 1938 total being approximately 48,800,000 barrels, or about 27 percent more than in 1937. Total demand was, therefore, about 569,800,000 barrels, or approximately 2.2 percent greater than the year before.

Coming into 1938 the Federal Reserve Board average of industrial production continued the downward trend begun during the latter part of 1937. This downward tendency continued through May of 1938, which registered the low point of the recent decline. From then through the remaining months of 1938 an improved rate of industrial production was evident. As the year 1939 opened, the Federal Reserve Board's index stood at approximately 102, and many estimates of 1939 activity place the production index for the year, as a whole, between 100 and 105.

Should such a rate of industrial production actually be established, and if related conditions supplement and strengthen that index, it is not unlikely that registrations of new motor vehicles during 1939 will total 3,000,000. It is estimated that on January 1 of this year about 26,850,000 motor vehicles were carried over from 1938. It is possible that 2,000,000 vehicles will be scrapped or replaced during the year, and that at the end of 1939 about 27,850,000 units will be in use. Averaging the number of units in use throughout the year, we find that they will probably total 27,350,000, a 1.2 percent increase over the number in use, on an average, during 1938.

Because of the probability that there will, on an average, be more vehicles in use during 1939 than in 1938, and because of the anticipated betterment in business conditions and production activity, it seems reasonable to expect a small increase in the domestic demand during this year. Exports probably will not continue the large increases registered during 1937 and 1938, and may even register some decline but yet continue to provide a substantial market. It would seem, therefore, that refiners may look forward to enjoying some increase in the sales of their principal product during 1939. Because of present conditions and the uncertainties involved, however, the conservative point of view, I think, is the one which concludes that there will be only a moderate increase in the total demand for gasoline during 1939, and particularly in the early part of the year.

As of the end of 1938, finished and unfinished gasoline inventories were less than on December 31, 1937. It is my opinion, however, that the industry ended the last high-consuming season with a considerable surplus of motor fuel, and that some surplus still exists. Calculations based upon the anticipated demand, adequate working stocks, and seasonal requirements indicate economic levels of finished and unfinished gasoline inventories at the beginning of the next high-consuming season to be not greater than 80,000,000 barrels. This level might be referred to as one which probably would never exist at any given time in that it would mean that no company would have any more than its basic requirements on the same date, and this is most unlikely ever to happen. The economic level of gasoline inventories on March 31, 1939, just referred to, compares with the 92,-

000,000 barrels actually in storage on March 31, 1938.

Recollection of the effect of the liquidation of much of the surplus which existed at the beginning of the 1938 high-consuming season is too vivid in the minds of everyone to need further reference. It is, however, interesting in comparison to summarize operations by refiners during the last quarter of 1938 in relation to economic levels of finished and unfinished gasoline on March 31 next. It appears that runs to stills during that three-months period averaged approximately 100,000 barrels per day greater than runs to stills for the winter period indicate as economically desirable. One cannot, therefore, say that it is statistically evident that refiners have completely realized the importance of their operations during the current winter season and the effect thereof on the economy of the industry during 1939.

Are refiners again going to build up uneconomically large stocks of gasoline in their efforts to supply this winter's furnace-oil requirements? I think it can be said without fear of successful contradiction that, generally speaking, the industry in the past has elected to produce its furnace-oil requirements currently as the market demanded this fuel and that, of course, has been in the winter season. Unnecessarily and uneconomically large gasoline inventories have been the result thereof. Does the industry accept furnace-oil as a principal product, and does furnace oil now share that distinction with gasoline? If so, why wouldn't it be good operating practice to build up stocks of light fuel oils in the summer as gasoline inventories are built up in the winter, thereby making it unnecessary to produce them as currently required with the resultant uneconomically large production of gasoline? True, light-fuel inventories were somewhat greater at the beginning of this season than a year ago, but not sufficiently large to indicate any well-defined change in previous methods of operation. Of course, the economic worth of cracking stock in the gasoline or light-fuel market is the important factor, but the advent of furnace oils to a position of prominence would seem to carry with it the responsibility of returning to refiners a greater portion of the cost of the raw material, thereby making it desirable to pass so-called cracking stock into the light-fuel-oil market rather than to convert it all into gasoline.

What effect the industry's tendency toward continually increasing octane values of motor fuel has on the over-all economics of the gasoline-light-fuel-oil problem is hard to say, but it would seem that any discussion of this general subject would be incomplete without at least a passing reference to it.

Another method of operation contributing to uneconomically high rates of runs to stills seems to result from the opinion that if more crude oil is run to stills, above certain levels, the resultant gasoline is produced at little or no cost whatever above that of the raw material involved. Attempts are often made to justify such operations with the qualification that such gasoline is shipped in the export market. But how much gasoline so produced ultimately goes toward building up uneconomically large stocks, and how much of the so-called very low-cost gasoline actually becomes the most expensive in otherwise disturbing economic equilibrium?

One must not overlook the fact when considering the probable causes of over-running crude oil that, in order to retain well connections against the time when they might be more urgently required and hard to get back if once relinquished, refiners many times keep up their crude-oil purchases and consequently their crude-oil runs to stills. This is perhaps as strong a motive for running excess crude oil at refineries as is the desire to operate plants at or near capacity, and illustrates again how closely related to the entire economy of the industry is the administration of our state conservation laws.

Gas Oil and Distillate Fuel Oils

The number of home-heating oil burners in use has almost doubled in the last five years. During the 1933-1934 winter there were approximately 920,000 in operation, and my guess is that the present winter will probably record an average close to 1,700,000, the latter figure indicating a considerable increase over the 1,550,000 average number of burners used in heating homes during last winter. The average number of degree-days of heating required during the past five seasons (the period from October 1 to the following March 31 being the one used for the purposes of this calculation) was approximately 5,600. Should the current heating season be representative of the average of the last 5, it should register approximately 5 percent more degree-days of heating than last winter. Interpreting these figures in relation to demand, it appears reasonable to estimate that between 10 and 15 percent more furnace oils will be used in heating homes this season than the 63,000,000 barrels consumed during last winter.

The domestic demand for gas oil and light fuel oils, including furnace oils, during 1938 was approximately 115,500,000 barrels. This is a decrease of 1.2 percent when compared with 1937. Export shipments of these oils during 1938 totaled about 29,000,000 barrels, a change of 4.3 percent downward. Total demand, therefore, was 144,500,000 barrels, or about 2 percent less than in 1937.

Somewhat complementary to the heating-oil demand, at least from the weather angle and the uncertainties thereof, is the winter demand for gasoline. There are other factors affecting this demand, to be sure, such as the number of automotive units in use, new car, truck and bus registrations, and general business conditions as they affect the consumption per unit in operation. A mild open winter would see a less than normal furnace-oil demand in relation to the number of burners in use, but in this event gasoline demand probably would be above normal expectations, and perhaps little crude oil would be run to stills primarily for furnace oils. Gasoline stocks in such circumstances would not pile up as rapidly, and it would seem to follow that the net over-all effect of weather conditions on the fortunes of the oil industry is, therefore, more beneficial in abnormally mild than in extremely severe winters.

Inventories of gas oil and distillate fuel in the area east of California were somewhat higher at the close of 1938 than a year ago; the greater part of this increase being along the Eastern and Gulf Coast, making it more readily available to the major furnace-oil marketing area. This additional inventory of light fuel will make it unnecessary for the industry, in the area referred to, to produce so large a portion of this winter's light fuel-oil demand, thereby eliminating the production of the gasoline incident to the manufac-

TABLE 1

Stocks of Gas Oil and Distillate Fuel Oil in the United States

(Figures in Barrels of 42 Gallons)

	Eastern and Gulf Coasts	Indiana, Illinois, Kentucky	East of California	California	Total United States
September 30, 1937	13,818,000	3,733,000	20,247,000	6,773,000	27,020,000
December 31, 1937	11,048,000	2,538,000	15,786,000	6,780,000	22,566,000
September 30, 1938	14,896,000	3,676,000	21,208,000	9,652,000	30,860,000
October 31, 1938	16,334,000	4,061,000	23,230,000	9,787,000	33,017,000
November 30, 1938	15,860,000	3,750,000	22,350,000	10,510,000	32,860,000
December 3, 1938	15,610,000	3,710,000	22,040,000	10,460,000	32,500,000
December 10, 1938	15,040,000	3,580,000	21,320,000	10,750,000	32,070,000
December 17, 1938	14,010,000	3,530,000	20,240,000	10,620,000	30,860,000
December 24, 1938	13,320,000	3,380,000	19,390,000	10,520,000	29,910,000

Note: Data from September 30, 1937 to October 31, 1938 are from U. S. Bureau of Mines reports; subsequent data are estimates of the American Petroleum Institute.

ture of that much furnace oil. Table 1, a comparison of gas oil and distillate fuels, by districts, indicates some interesting relationships.

Basically the problem involved in balancing light-fuel-oil production and inventories thereof with economic gasoline requirements comes about because of the complete lack of relationship between the demand for these two products and the normal yields of each from a barrel of crude oil. Other economic factors are, of course, involved, and it goes back to the cost of the raw material in relation to the economic worth or value of that portion of the barrel which becomes cracking stock. It is interesting, in this connection, to observe that the new refining processes now being made available to the industry promise considerably greater flexibility as to yields and, therefore, a partial and, perhaps ultimately, a complete solution to the problems involved in this phase of the industry's operations.

Residual Fuel Oils

Domestic sales of heavy fuel oil during 1938 naturally suffered in relation to 1937 because of economic conditions and the low level of industrial activity. It is interesting to note, however, that the turning point in the trend of total sales (domestic and export) apparently occurred in the third quarter of this year, as the following tabulation of quarterly percentage changes during 1937 and 1938 will show:

	1938 Percent	1937 Percent
First quarter	**—13.2**	+8.3
Second quarter ..	**—16.3**	+9.2
Third quarter ...	**—12.0**	+6.3
Fourth quarter...	+ 1.5	**—0.4**

Taking the year 1938 as a whole, it now appears as though domestic sales of heavy fuel oils will have totaled about 287,500,000 barrels, showing a decline of almost 12 percent from the 1937 level. Export shipments increased during the year to 18,100,000 barrels, or approximately 18 percent. Total sales in 1938, therefore, registered 305,600,000 barrels, or about 10 percent less than the 1937 total of approximately 341,000,000 barrels.

Stocks of heavy fuel oil in the country, as a whole, are at high levels, but one cannot really get a complete picture without studying the inventories and demand for this product in considerable detail. Stocks in all districts are estimated to have been approximately 116,800,000 barrels on December 24, 1938. This compared with 95,019,000 barrels on December 31, 1937, an increase during the year of almost 22,000,000 barrels.

The California district closed the year with about 88,400,000 barrels in storage, having added about 21,000,000 barrels during 1938. In the area east of California stocks totaled about 28,500,000 barrels, showing an increase of only 1,000,000 barrels during the same period. On the Pacific Coast these inventories seem to be continuing their upward tendency, while in the area east of California there has been a distinct downward trend during the last quarter of the year, reflecting, no doubt, the increasing rate of productive activity which prevailed during the latter part of 1938.

Table 2 shows the trend of heavy-fuel-oil stocks grouped into major areas as of comparable dates in both 1937 and 1938.

Crude-Oil Inventories

About two years ago I made the statement that 250,000,000 barrels represented in my mind the minimum level to which crude-oil inventories could go under the then prevailing conditions of supply and demand without resulting in uneconomic operations. In other words, I thought that figure represented the lowest level of crude-oil inventories required above ground to permit the industry, as it was then geared, to operate conveniently and economically. Much has happened since that time, however. Many more wells have been drilled, potentialities to produce have increased greatly, and the supplies of crude oil in the form of known reserves have grown to a considerable extent. One natural effect of these developments is to cause a reconsideration of the amount of contingent reserves

TABLE 2

Stocks of Residual Fuel Oil in the United States

(Figures in Barrels of 42 Gallons)

	Eastern and Gulf Coasts	Indiana, Illinois, Kentucky	East of California	California	Total United States
September 30, 1937	16,191,000	3,529,000	25,810,000	63,197,000	89,007,000
December 31, 1937	16,777,000	4,309,000	27,363,000	67,656,000	95,019,000
September 30, 1938	19,764,000	5,771,000	33,661,000	86,705,000	120,366,000
October 31, 1938	19,682,000	5,511,000	33,344,000	87,222,000	120,566,000
November 30, 1938	19,230,000	5,010,000	31,490,000	87,840,000	119,330,000
December 3, 1938	18,940,000	4,940,000	31,090,000	88,020,000	119,110,000
December 10, 1938	18,550,000	4,760,000	30,400,000	88,310,000	118,710,000
December 17, 1938	17,750,000	4,580,000	29,390,000	88,320,000	117,710,000
December 24, 1938	16,870,000	4,420,000	28,450,000	88,400,000	116,850,000

Note: Data from September 30, 1937 to October 31, 1938 are from U. S. Bureau of Mines reports; subsequent data are estimates of the American Petroleum Institute.

TABLE 3

Crude Oil Inventories

(Figures in Barrels of 42 Gallons)

	Estimated December 17, 1938	PREVIOUS RECORD LOW		Reconstructed by Districts
		Amount	Date	
	1	2	3	4
Pennsylvania Grade	5,631,000	4,324,000	January 1, 1937	4,300,000
Other Appalachian	1,190,000	883,000	October 31, 1936	900,000
Lima, Northeast Indiana, Michigan	1,187,000	806,000	December 31, 1929	800,000
Illinois, Southwest Indiana	10,894,000	9,489,000	September 30, 1937	9,500,000
North Louisiana and Arkansas	7,967,000	7,956,000	December 10, 1938	8,000,000
West Texas, Southeast New Mexico	23,422,000	23,253,000	December 10, 1938	23,300,000
East Texas	17,770,000	17,605,000	November 26, 1938	17,600,000
Other Mid-Continent	107,901,000	107,901,000	December 17, 1938	107,900,000
Gulf Coast	26,713,000	*	*	21,500,000
Rocky Mountain	20,180,000	*	*	10,000,000
East of California	222,855,000	.....	.....	203,800,000
California	34,162,000	25,835,000	January 31, 1938	25,800,000
Total Domestic	257,017,000	.....	.....	229,600,000
Foreign Crude	2,914,000	1,424,000	February 28, 1937	1,400,000
Lease Stocks	10,000,000	8,131,000	December 31, 1933	10,000,000
Total All Crude Stocks	269,931,000	.....	.....	241,000,000

* Previous record low not considered representative of current requirements.

which it is necessary to carry above ground.

On December 17 of this year crude-oil inventories in the country, as a whole, are estimated from U. S. Bureau of Mines' figures to have been slightly less than 270,000,000 barrels. This is the lowest level to which crude-oil stocks have declined since early in 1922, and a question often asked is: how much, if any, surplus crude oil is there still in storage, and has the liquidation of the past year or more run its full course?

In this connection, it is very interesting to study the trend of crude-oil inventories by districts over the past several years in an effort to determine what minimum economic requirements of each grade might be in order that some indication may be obtained of the near-term trend. In Table 3 there is indicated in Column 1, the latest estimates of crude inventories by fields of origin; in Column 2 is shown the previous record low level to which inventories of each grade have ever receded; in the next column, the date on which this occurred; and in Column 4 reconstructed figures, by districts. In the Gulf Coast and Rocky Mountain regions the previous record lows were not considered representative of current requirements, so these were disregarded and our own estimate of current economic minimums supplied.

After arriving at the theoretical figure indicated for the United States as a whole, under Column 4, which is nothing more than a total of the lowest level ever recorded for each of 11 of the 13 general categories, and estimates of current requirements for the remaining 2, each group was again studied in an effort to determine whether liquidation was still proceeding or whether it might be thought to have run its course, and whether any further indication might be obtained as to what the minimum requirements of crude oil above ground might be for the industry as a whole.

These figures, taken into consideration with the information which was developed at the December statewide hearing before the Texas Railroad Commission in Austin, threw considerable light on this subject. It was fairly conclusively developed at that hearing that the companies represented there had, as of about the first of December, a surplus of perhaps 35,000,000 barrels in the area east of California. Estimating the possible surplus of companies in the area east of California not represented, and for the California district at another 10,000,000 barrels, it develops that minimum economic requirements of crude-oil inventories at this time and under present conditions approximate 225,000,000 barrels, as compared with actual inventories on December 1, and more recently, of 270,000,000 barrels.

Another interesting phase of this study indicated that liquidation was either complete, at an end temporarily at least, or that stocks were increasing, in all important areas except the states of Oklahoma and Texas. What the near-term withdrawals of crude oil originally produced in these two states actually will be, it is, of course, impossible to say; but in those cases where representatives of companies which desired further to liquidate were present, it appeared that only slight reductions were contemplated during this winter.

The present minimum economic requirements of crude oil in operating facilities and as a contingent reserve above ground, previously indicated at 225,000,000 barrels, is, of course, a condition which will probably never be realized at any given date. As in the case of gasoline, it is at best a theoretical minimum economic figure; and it would appear that actual operating levels, while tending to recede toward that figure over a period of time will, under the varying conditions of supply and demand and other current necessities and contingencies, assume an actual operating level at a somewhat higher point.

While no definite information is available, Column 4 of Table 3 gives an indication, at least, of where part of the 45,000,000-barrel surplus crude oil is located and the fields of origin of some of the remainder. It becomes apparent, therefore, that considerable surplus crude oil still exists even after the severe liquidation of the past year or more, and that there will probably be further withdrawals of crude oil from storage during 1939.

Inventories of Crude Oil and All Refined Products

Table 5, indicating for California and for the area east of California, separately, the inventories of several principal products, a total for all refined products and crude petroleum, carries some very interesting comparisons, and indicates in actual figures the extent of the increases in certain inventories which have occurred over the past two years and the severe liquidation which has taken place in other instances. One striking illustration

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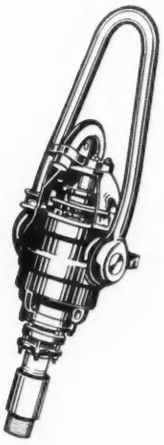

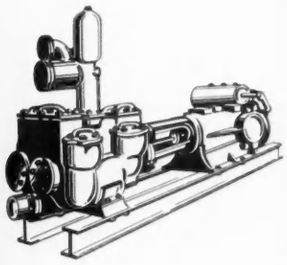

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TABLE 5

Stocks of Crude Oil and Refined Products

(Figures in Barrels of 42 Gallons)

		December 31, 1936	December 31, 1937	December 24, 1938
Finished and Unfinished Gasoline	California	13,402,000	14,771,000	14,300,000
	East of California	49,512,000	62,219,000	55,700,000
Gas Oil, Distillate and Fuel Oil	California	8,958,000	6,780,000	10,500,000
	East of California	13,855,000	15,786,000	19,400,000
Residual Fuel Oil	California	65,481,000	67,656,000	88,400,000
	East of California	18,755,000	27,363,000	28,500,000
Total Refined Products	California	97,453,000	97,537,000	119,700,000
	East of California	133,197,000	160,365,000	158,900,000
	Total United States	230,650,000	257,902,000	278,600,000
Crude Petroleum	California	34,189,000	30,407,000	36,200,000
	East of California	254,390,000	275,677,000	233,700,000
	Total United States	288,579,000	306,084,000	269,900,000
Crude Petroleum and Refined Products	California	131,642,000	127,944,000	155,900,000
	East of California	387,587,000	436,042,000	392,600,000
	Total United States	519,229,000	563,986,000	548,500,000

Note: All data from U. S. Bureau of Mines, except those for December 24, 1938, which are estimates of the American Petroleum Institute.

of this is found in noting the large increase in crude-oil stocks in the area east of California in 1937, which was immediately followed during 1938 by a liquidation almost twice as great. The relative positions of California and the area east of California in both light and heavy fuels are also rather strikingly shown as is the opposite trend in crude-oil inventories in California as compared with crude stocks in the remainder of the country outside of the Pacific Coast area.

Drilling Activity

Table 4 is interesting in illustrating how the upward and downward fluctuations in the basic economics of the petroleum industry affect the drilling of new wells. The figures clearly indicate that during the first half of 1938 approximately 1,600 fewer wells were completed and by the end of the third quarter, as the situation developed further, 4,300 less wells appear to have been the record during the first nine months. For the year, as a whole, we find approximately 6,500 fewer wells completed during 1938 than during 1937, a decline of almost 17 percent.

General

The oil industry came into 1939 not very far removed from a basically sound position and with a measure of stability within its grasp. A further contribution, I think, would be the setting of crude-oil production allowables over longer periods than a month. It is gratifying to note the start in this direction made recently by the Texas Railroad Commission. The effect upon the operations of the various companies and the elimination of many of the uncertainties connected with changing rates of production monthly become immediately obvious. Not only are many of the uncertainties of the refiner eliminated thereby, but producers, it would seem, benefit accordingly. True, the technique of forecasting the demand for gasoline and other products and relating this to the reasonable market demand for crude oil, after giving due consideration to economic changes in product and crude-oil inventories, is not an exact science. I believe almost everyone will agree with this, as they will agree with the statement that even though the tools with which we have to work are not sufficiently refined to allow exact calculation of future demand, the element of error in the past has been exceedingly small.

I think it not only desirable but entirely possible that calculations could be made which would be sufficiently accurate to allow the setting of production allowables for each of two three-months periods during the winter season from September 30 to the following March 31, and each of three two-months periods during the high-consuming season from March 31 to the following September 30.

The summer season is broken up into three parts because it is economically sound that there be a minimum carry-over of the products stored during the previous winter, with which to augment the summer production in supplying that season's peak demand. I am sure there is no desire upon the part of anyone to eliminate the monthly meetings, and these should continue even under the conditions above outlined. The economic stability which would be derived from extending the present monthly allowable system to include longer periods would completely justify an attempt to put such a plan into effect. It is my opinion that any overage or underage discovered in the figures for any given period could very well be taken into account in setting the allowables for the following period.

In conclusion, what was said at the beginning will bear repetition. Will the industry consolidate the gains that could ensue from its present fairly well liquidated state? The next few weeks should provide a clearer indication than is now possible. The situation will bear watching from week to week as the answers to this and other questions unfold.

TABLE 4

Number of Wells Completed in the United States—1938 vs. 1937

	Oil	Gas	Dry	Total
6 Months, 1938	9,760	972	2,899	13,631
6 Months, 1937	11,218	1,133	3,060	15,411
July, 1938	1,539	149	543	2,231
August	1,648	187	573	2,408
September	1,601	160	547	2,308
9 Months, 1938	14,548	1,468	4,562	20,578
9 Months, 1937	18,030	1,889	4,924	24,843
October, 1938	1,715	174	550	2,439
November	1,572	184	501	2,257
December (est.)	1,525	170	505	2,200
Total, 1938	19,360	1,996	6,118	27,474
Total, 1937	23,839	2,676	6,560	33,075

Crude Oil Reserves of Texas Panhandle

By HENRY ROGATZ, Consulting Geologist
Rule Building, Amarillo

PART 4

Reserves by Formations and Future Discovery Possibilities

Comparison of Producing Formations

Since the several zones separate themselves naturally into granite wash and dolomite, there have been included a few statistics on the formations in these two groups. The arkosic zone (D) has been omitted from these figures because of the variability of the lithology from place to place. In one pool the D zone will be an arkose and fall naturally into the granite wash classification, and in another pool it will be an arkosic dolomite or lime and would have to be classed with the dolomite or lime formations. By omitting this formation, which is not an important one at best, the difficulty has been avoided.

The formations are divided as follows: Dolomite (B, C^1 and C^2); granite wash (E^1 and E^2). Taken as a whole, the dolomite formations are found to be much more extensive than the granite wash, since the dolomite consists of 52½ percent of the acreage, and will produce ultimately 55½ percent of the oil as compared with the corresponding percentage of 34½ percent and 35 percent for the granite wash. It is interesting to note the difference in the ultimate recovery per acre between these two formations for values of A and B and A, B and C leases. When considering only the commercial leases (A and B), the granite wash is superior to the dolomite by 1389 barrels per acre. However, when the non-commercial developed (C) leases are included, the granite wash drops below the dolomite by about 343 barrels per acre. Obviously, the cause of this change is the weak showing made by the non-commercial granite wash leases. It is natural, because of the lithologic character of the granite wash, to expect great areas to produce quantities of oil varying from a few barrels up to tens of thousands of barrels per acre. The leases which have recoveries between 1000 and 4000 barrels per acre are very numerous and these are the properties which belittle the real value of the granite wash.

The following table lists the recovery per acre of the formations in their order of superiority. Column 1 includes only commercial leases (A and B) and column 2 shows also the non-commercial undeveloped (A, B and C) leases.

Ultimate Recovery Per Acre for A. B.	Formations	Ultimate Recovery Per Acre for A. B.
1st.—10,259 bbls.	E^1	2nd—7,827 bbls.
2nd— 8,886 bbls.	E^2	4th—6,421 bbls.
3rd— 8,536 bbls.	C^1	1st—8,146 bbls.
4th— 7,623 bbls.	C^2	3rd—6,436 bbls.
5th— 6,883 bbls.	D	5th—6,421 bbls.
6th— 5,454 bbls.	B	6th—4,864 bbls.

A comparison of the respective value in this table shows that the average recovery of the upper granite wash (E^1) is far ahead of that of the nearest competitor. It also shows that the value for A, B and C has dropped considerably below that for A and B. The explanation of this can be found in the extreme difference between the productivity of the commercial and non-commercial leases. It has been noted that there are a comparatively few average granite wash leases; generally, the leases are either very good or very poor, a condition not apparent among the dolomite properties. Obviously, an occurrence like this could produce very readily just such a discrepancy between the values of commercial and non-commercial granite wash leases.

By general comparison, an average commercial granite wash lease is much more valuable than almost any of the best dolomite leases, and because of this, most Panhandle operators originally preferred the former to the latter.

Part 1 of this series appeared in The OIL WEEKLY of January 2, 1939.

Part 2 was published the following week.

Part 3 was in the January 16, 1939, issue.

However, these granite wash leases have become so scarce now, that operators have found it necessary to turn to the dolomite leases for their production.

The oolitic dolomite is, by far, the most extensive of all of the formations, and ultimately will produce the greatest volume of oil. Of course, this does not mean that the formation is superior to some of the others. It can be shown that the additional volume of ultimate production is a result of greater acreage, and not greater productivity.

The volume of oil which will be produced ultimately by the oolitic dolomite is 36 percent of the total for the entire field. The area which will supply this amount of oil is 31 percent of the total producing acreage of the field.

The oil reserve of the Panhandle has its greatest volume stored in vast oolitic dolomite reservoir where there is in storage almost 44 percent of the field's total future supply. This shows an increase of 8 percent over the percentage of ultimate recovery of this formation. The past production from the C^1 formation is only 16 percent of the ultimate recovery and offers ample reason for the high percentage of reserve. As

TABLE 15

Summary Data on Formations

COMMERCIAL DEVELOPED LEASES (A)

FORMATIONS	Wells	Acreage	Past Production	Average Past Production per Acre	Estimated Reserves	Average Reserves per Acre	Ultimate Recovery	Average Ultimate Recovery per Acre
B	33	991	1,109,427	1,119	4,296,463	4,335	5,405,890	5,454
C^2	888	22,518	71,220,071	3,162	107,458,643	4,772	178,678,714	7,934
C^1	1,447	37,650	46,097,589	1,224	283,382,974	7,526	329,480,563	8,751
D	405	11,877	34,317,904	2,889	48,445,861	4,078	82,763,765	6,968
E^2	643	17,750	67,931,039	3,827	92,034,212	5,185	159,965,251	9,012
E^1	636	16,555	57,617,115	3,480	114,622,056	6,923	172,239,171	10,404
Total	**4,052**	**107,341**	**278,293,145**	**2,592**	**650,240,209**	**6,057**	**928,533,354**	**8,650**

COMMERCIAL DEVELOPED AND UNDEVELOPED LEASES (A. B.)*

B	33	991	1,109,427	1,119	4,296,463	4,335	5,405,890	5,454
C^2	888	24,824	71,220,071	2,869	118,014,310	4,754	189,234,381	7,623
C^1	1,447	42,503	46,097,589	1,084	316,763,307	7,452	362,860,896	8,536
D	405	12,267	34,317,904	2,797	50,125,861	4,086	84,443,765	6,883
E^2	643	18,230	67,931,039	3,726	94,074,212	5,160	162,005,251	8,886
E^1	636	16,955	57,617,115	3,398	116,342,056	6,861	173,959,171	10,259
Total	**4,052**	**115,770**	**278,293,145**	**2,403**	**699,616,209**	**6,043**	**977,909,354**	**8,446**

ALL LEASES EXCEPT NON-COMMERCIAL UNDEVELOPED (A. B. C.)*

B	36	1,238	1,201,540	970	4,820,350	3,893	6,021,890	4,864
C_2	1,016	31,127	74,026,788	2,378	126,329,521	4,058	200,356,309	6,436
C_1	1,491	45,396	46,775,407	1,030	323,053,489	7,127	369,828,896	8,146
D	553	19,330	37,521,777	1,941	57,221,968	2,960	94,743,745	4,901
E_2	811	27,703	72,342,479	2,611	105,562,916	3,810	177,905,395	6,421
E_1	762	23,514	60,330,573	2,565	123,715,541	5,261	184,046,114	7,827
Total	**4,669**	**148,308**	**292,198,564**	**1,970**	**740,703,785**	**4,994**	**1,032,902,349**	**6,964**

* Figures for past production do not include Commercial Undeveloped Leases (B).

Summary Data by Counties

COMMERCIAL DEVELOPED LEASES (A)

COUNTIES	Wells	Acreage	Past Production	Average Past Production per Acre	Estimated Reserves	Average Reserves per Acre	Ultimate Recovery	Average Ultimate Recovery per Acre
Carson	406	14,520	24,859,811	1,712	85,613,927	5,896	110,473,738	7,608
Gray	1,774	45,200	129,837,173	2,872	304,704,270	6,741	434,541,443	9,613
Hutchinson	1,586	43,111	108,607,568	2,519	233,150,893	5,408	341,758,461	7,927
Moore	31	430	3,422,061	7,958	1,552,651	3,610	4,974,712	11,569
Wheeler	255	4,080	11,566,532	2,834	25,218,468	6,180	36,785,000	9,015
Total	**4,052**	**107,341**	**278,293,145**	**2,592**(Av.)	**650,240,209**	**6,057**(Av.)	**928,533,354**	**(8,650**Av.)

COMMERCIAL DEVELOPED AND UNDEVELOPED LEASES (A. B.)*

Carson	406	16,760	24,859,811	1,483	103,643,927	6,184	128,501,738	7,667
Gray	1,774	46,490	129,837,173	2,792	310,224,270	6,672	440,061,443	9 464
Hutchinson	1,586	48,010	108,607,568	2,262	258,976,893	5,394	367,584,461	7,656
Moore	31	430	3,422,061	7,958	1,552,651	3,610	4,974,712	11,568
Wheeler	255	4,080	11,566,532	2,834	25,218,468	6,180	36,785,000	9,014
Total	**4,052**	**115,770**	**278,293,145**	**2,403**	**699,616,209**	**6,043**	**977,907,354**	**8,446**

ALL LEASES EXCEPT NON-COMMERCIAL UNDEVELOPED (A. B. C.)*

Carson	454	19,570	26,028,402	1,330	107,473,336	5,491	133,501,738	6,821
Gray	1,964	58,845	135,116,283	2,296	329,932,482	5,606	465,048,765	7,902
Hutchinson	1,823	60,993	113,396,194	1,859	271,610,479	4,453	385,006,673	6,312
Moore	52	640	3,808,784	5,951	1,586,524	2,478	5,395,308	8,430
Wheeler	375	8,250	13,815,079	1,674	30,100,964	3,648	43,916,043	9,015
Total	**4,669**	**148,308**	**292,198,564**	**1,970**	**740,703,785**	**4,994**	**1,032,902,349**	**6,964**

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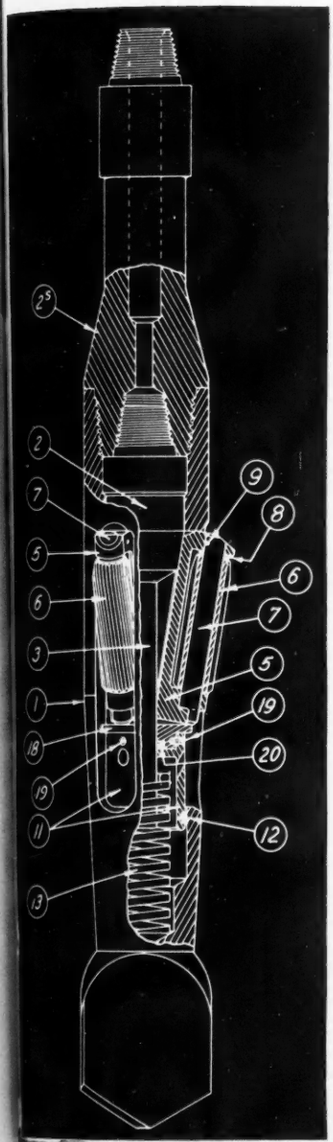

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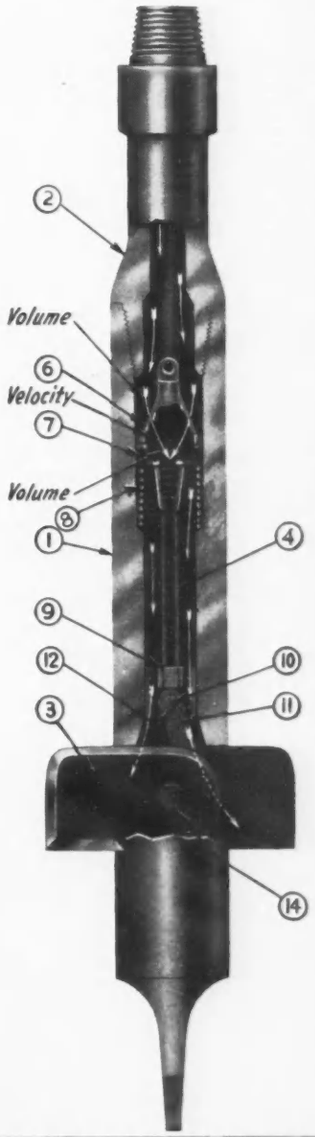

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stated above, the failure to develop this formation until comparatively recently is responsible for the low past production.

Unexplored Reserves.

There are still many areas in the Panhandle which possess potential possibilities of commercial production and therefore are worthy of exploration. In many instances the uncertainty of the possibilities lies not in their questionable structural location but rather in the questionable character of the producing formations which makes it difficult to determine with any degree of accuracy the chances for the discovery of oil or the probable extent of these likely discoveries.

Among the unexplored possibilities, there are recognized two types of production: (1) Shallow, or production from formations of the same age as now producing (Permo-Pennsylvanian); (2) Deep, or production from pre-Pennsylvanian formations, most likely Mississippian or Ordovician.

With regard to the shallow possibilities, there are reasonable opportunities in practically all of the five oil producing counties, as well as southeastern Hartley County. The most favorable, and at the same time the most uncertain, is Moore County.

Moore County has been explored only slightly and until three years ago had been practically untouched. At the present time, the possibilities of production are being reduced gradually, because of the failure to find oil during the extensive gas drilling campaign of Phillips, Anderson-Kerr and Shamrock. The many wells drilled during the last three years have done practically nothing to open up the many anticipated oil pools except along a definite trend in the northern portion of the county. In the latter case, the oil is produced from a lime which seems to have little porosity, yet in many cases it produces commercially. From the manner in which the oil wells line themselves up, it might be suspected that the production is coming from one extensive fault or fault system. If this is true, the oil must be tapping reservoirs of a more normal character, such as a dolomite in the vicinity of some pre-Pennsylvanian formation. Because of the great depth to the pre-Pennsylvanian in this area, it seems quite certain that the latter is not likely to be the case.

That the Moore County lime is drawing upon the dolomite for its production is not unreasonable, for this dolomite lies in direct contact with the lime, and there is also a horizontal gradation from one to the other, to the north. Furthermore, the dolomite, when porous, nearly always is productive wherever found at the proper elevation above sea level, except where it is outside the limits of the "oil-water contact line," as described in Part I. The dolomite has not yet produced in Moore County, but it is true that no wells have been drilled as yet in any area where the dolomite is located properly. The area holding the best dolomite prospects in Moore County is in the west and southwest portion of the county in an arm of the Hartley Basin. From here, slightly northeastward, toward the area of lime production is a very important potential oil field, and one of the few portions of the Panhandle which has undergone no development work. An extensive basin lying lengthwise across almost the entire north end of the county is also prospective, but the most recent developments along the south edge of this basin tend to indicate that bottom hole water will be encountered where the oil pay should exist. It seems apparent that the "oil-water contact line" comes south of this area and just north of the Sunray pool.

Hutchinson County has had sufficient exploration in much of its favorable area to indicate what to expect regarding the discovery of any new commercial pools. The most favorable prospective producing area is located north and northwest of Stinnett. However, any new discoveries immediately north of the Stinnett pool would be an extension of that pool for all practical purposes. The production would be in the oolitic dolomite. The only unfavorable condition which affects production in this locality would be the influence of the "oil-water contact line." As described previously under the topic of this name (see "Geology"), it is explained how the oil-water contact cuts across the contours north of both the town of Stinnett and the Stinnett pool. Depending upon how westerly this contact line trends, there is based the possibility of the discovery of oil in this area north of the Stinnett pool.

Another area which eventually may develop commercial oil production is western Hutchinson County, in the vicinity of the Herring and Carver Ranches. Although a few wells have been drilled already in widely scattered positions in these areas, the results have not been too encouraging. It is true that there have been several commercial wells drilled, but the

TABLE 16

Summary of Granite Wash and Dolomite Formations

COMMERCIAL DEVELOPED LEASES (A)

FORMATIONS	Wells	Acreage	Past Production	Average Past Production per Acre	Estimated Reserves	Average Reserves per Acre	Ultimate Recovery	Average Ultimate Recovery per Acre
Dolomite	2,368	61,159	118,427,087	1,936	395,138,080	6,460	513,565,167	8,396
Granite Wash	1,279	34,305	125,548,154	3,659	206,656,268	6,024	332,204,422	9,683
COMMERCIAL DEVELOPED AND UNDEVELOPED LEASES (A. B.)*								
Dolomite	2,368	68,318	118,427,087	1,733	439,074,080	6,426	557,501,167	8,159
Granite Wash	1,279	35,185	125,548,154	3,568	210,416,268	5,980	335,964,422	9,548
ALL LEASES EXCEPT NON-COMMERCIAL UNDEVELOPED (A. B. C.)*								
Dolomite	2,543	77,761	122,003,735	1,568	454,203,360	5,841	576,207,095	7,409
Granite Wash	1,573	51,217	132,673,052	2,590	229,278,457	4,476	361,951,509	7,066

* Figures for past production do not include Commercial Undeveloped Leases (B).

The Shreveport Times

SHREVEPORT, LA., MONDAY, OCTOBER 17, 1938

PRICE FIVE CENTS PER COPY

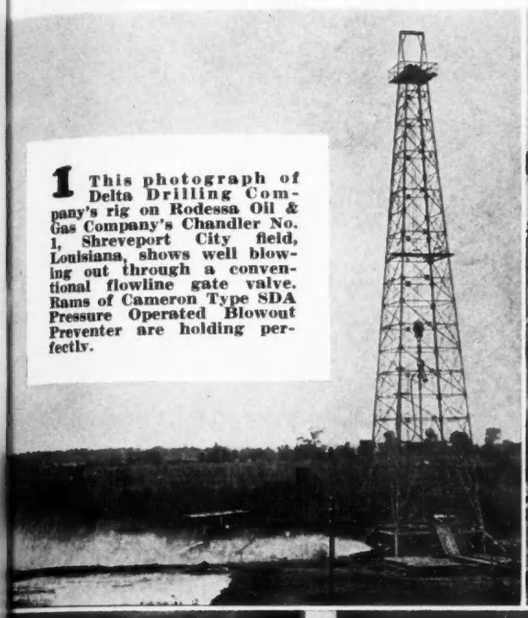
ASSER INSIDE CITY LIMITS WILD

HAZARD GREAT FROM GAS AT RODESSA TES

2nd Second Well to Now Pass of City to Go O of Control; It May Capped by Morning

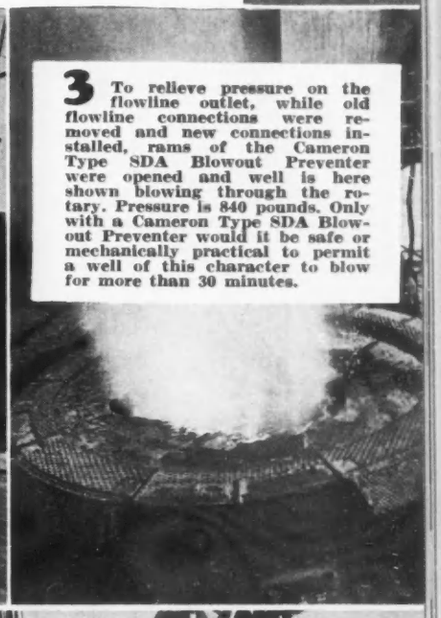
CROWD OF CURIOUS INCREASES DANG

2 WILD WELLS KILLED IN THE NEW SHREVEPORT, LOUISIANA FIELD WITH CAMERON PRESSURE OPERATED CONTROL EQUIPMENT.



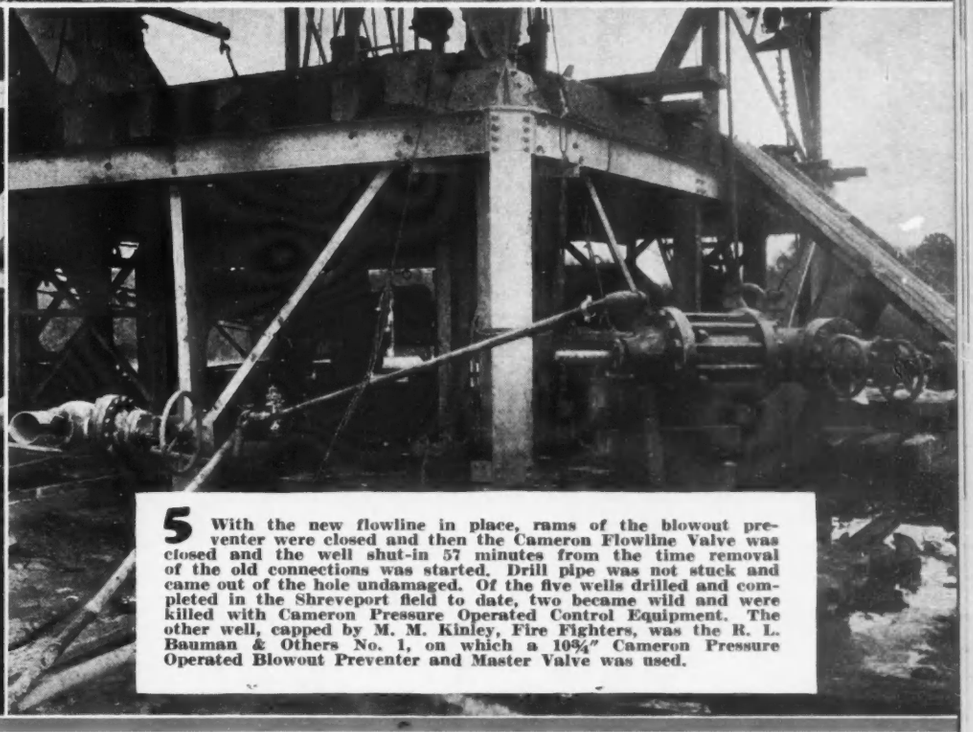
1 This photograph of Delta Drilling Company's rig on Rodessa Oil & Gas Company's Chandler No. 1, Shreveport City field, Louisiana, shows well blowing out through a conventional flowline gate valve. Rams of Cameron Type SDA Pressure Operated Blowout Preventer are holding perfectly.

2 Close-up photograph showing members of drilling crew preparing to back out flowline with badly cut conventional gate valve on outer end. Flowline was made up directly in female outlet of Cameron Type SDA Blowout Preventer. Crew members on derrick floor, by their unconcern, reflect their complete confidence in the Cameron Blowout Preventer.



3 To relieve pressure on the flowline outlet, while old flowline connections were removed and new connections installed, rams of the Cameron Type SDA Blowout Preventer were opened and well is here shown blowing through the rotary. Pressure is 840 pounds. Only with a Cameron Type SDA Blowout Preventer would it be safe or mechanically practical to permit a well of this character to blow for more than 30 minutes.

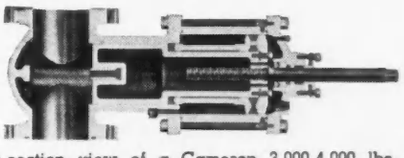
4 After the old flowline had been removed, a casing nipple with 6" A.P.I. flange made up on one end was screwed into female flowline opening of preventer. A 20-foot joint of casing with mating flange made up on one end and a Cameron Pressure Operated Flowline Valve made up on the other end, was then stabbed and bolted to the flanged flowline opening. Note close-up of 7" conventional gate valve and the manner in which nipple and collar was cut by well flow.



5 With the new flowline in place, rams of the blowout preventer were closed and then the Cameron Flowline Valve was closed and the well shut-in 57 minutes from the time removal of the old connections was started. Drill pipe was not stuck and came out of the hole undamaged. Of the five wells drilled and completed in the Shreveport field to date, two became wild and were killed with Cameron Pressure Operated Control Equipment. The other well, capped by M. M. Kinley, Fire Fighters, was the R. L. Bauman & Others No. 1, on which a 10¾" Cameron Pressure Operated Blowout Preventer and Master Valve was used.

Here's Why!

When hydraulic closing pressure is applied to a Cameron Pressure Operated Gate Valve, a heavy cylindrical ram-gate, fitted with a self-feeding ram packing element, moves smoothly and quickly through a horizontal bore at right angles to the well bore. The self-feeding ram packing element contacts the single seat and instantly effects a positive, leak-proof seal. Should the seat be corroded or sand-cut, packing is automatically fed out to fill and seal any inequalities. Even though the seat has been badly cut, as a result of considerable blowing-through, sufficient reserve of packing material is provided to make a shut-off. This valve has no delicate sealing surfaces, and does not rely upon steel-to-steel contact to make a seal. It is the only valve manufactured which can be expected to seal after its seat has been sand-cut or damaged.



Cross-section view of a Cameron 3,000-4,000 lbs. test, Pressure Operated Gate Valve, which is also available in the new series 900 A.P.I.—6,000 lbs. test pressure models.

CAMERON IRON WORKS, INC.

711 MILBY ST. HOUSTON, TEXAS

Export: 74 Trinity Place, New York, N. Y.

general feeling is that the area is too spotted because of the limy dolomite or lime section from which it has to produce. At the present time, the area seems to be more valuable as a gas reserve. That there exist large amounts of oil under portions of these areas, there seems to be little doubt, but whether it can be removed from the ground commercially remains to be seen. Possibly it may be necessary to await a change in the economic status of the oil industry to make this area commercial.

Gray County's prospective oil areas lie largely south of the axis of the main Granite Ridge. Production would have to come mostly from the granite wash, although some of the dolomite may produce. Although it is very doubtful whether there would be discovered any good pools here, the area certainly is not condemned. From facts so far accumulated, the preponderance of evidence suggests that the oil in this area migrated from the Anadarko Basin north of the Granite Ridge and through the gap formed by the LeFors Basin. If this is true, the probability of large oil deposits south of the ridge is not encouraging. In any event, the area of probable production open to wildcat exploration is enormous — at least 100 square miles. In the northern part of this area there will be an occasional well brought in which will produce from the creviced granite. Each of these wells will cause the drilling of several dry offsets, with the attendant financial waste.

The area on the eastern flank of the LeFors Basin, and located slightly southwest of the Chapman pool, is a prospective oil territory. Production here would be expected in both the granite wash and the dolomite, but more likely the latter.

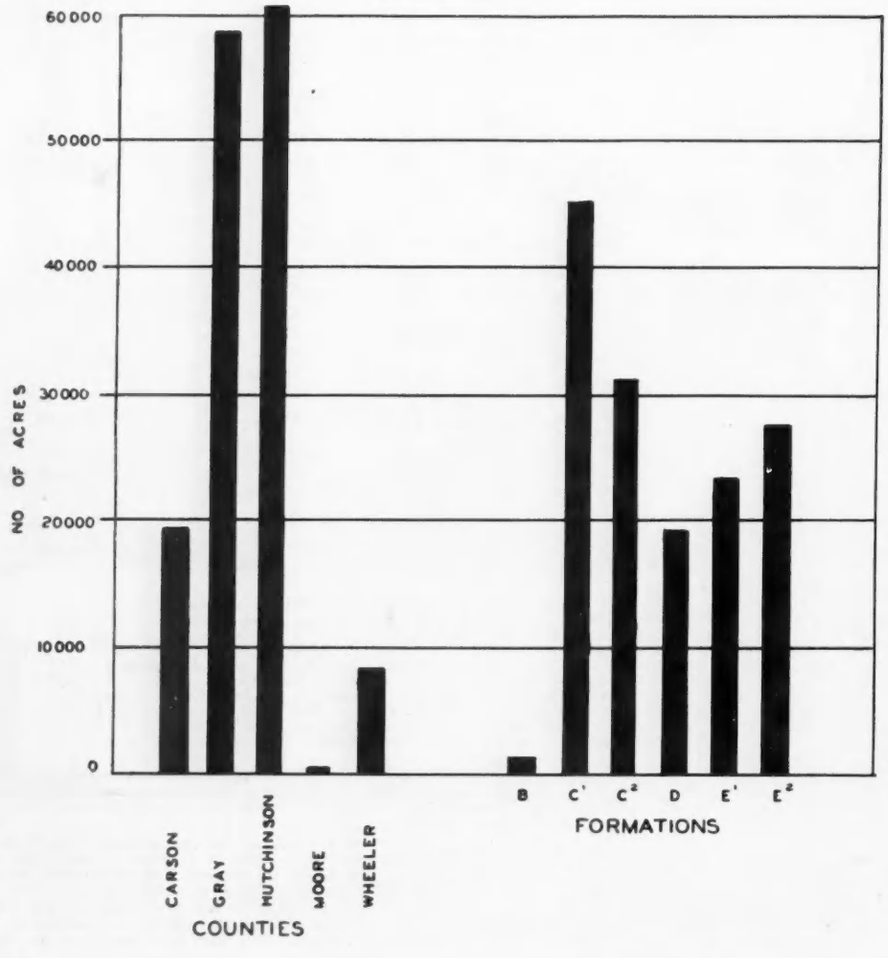
Wheeler County has an area having considerable possibilities along the fault zone in the eastern part of the county. This area would produce from the C^1 dolomite and arkosic (D) dolomite, if productive at all, and it would be narrow and spotted along the fault. Within the last two years or so there has been one discovery in this trend, the Teci Pool. This development, however, was disappointing because the wells were small.

Carson County presents extensive unexplored areas of which only a small portion have favorable possibilities. The best prospective trend lies along the Carson County fault on the south side of the Granite Ridge. The Fields pool is established already, its areal extent being confined to only 500 acres and all of that will not be commercial. Other small pools like this may be developed along the upthrown side of this fault. The oil can be expected in the granite wash (E^1) formation and will occur well above sea level. It appears most likely that the oil along the fault migrated from the north side of the ridge across a low saddle. The pools, if present, most likely will be small isolated patches extending along the sixteen miles of the fault line, while the width of the strip will be very narrow.

In the western part of the county, where the fault dies out and the dip of the ridge becomes normal, there is an area which will receive eventually a warranted amount of exploration based upon the natural assumption that the migration or flushing of the oil from the north to the south side of the ridge might have progressed sufficiently to permit the accumulation at this distant point, just as in the Fields pool. While the chances are rather poor, the area is entitled to a couple of tests to exhaust the granite wash and dolomite possibilities.

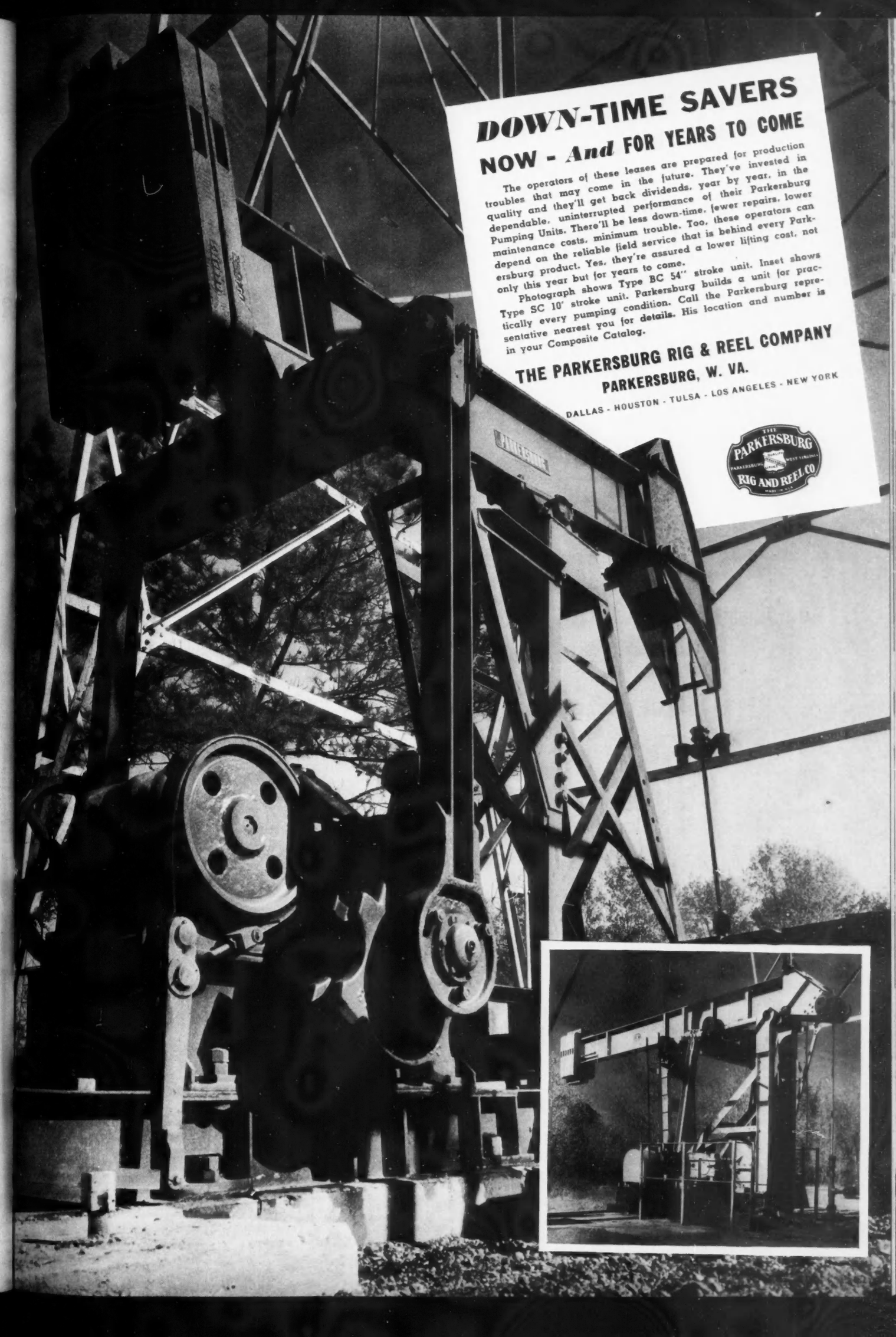
The southeastern portion of the county is certainly not among the areas definitely proved dry, although the possibilities are not very encouraging for shallow oil. A ridge exists here which appears to be a cross fold at right angles to the main Granite Ridge. If oil is found in this area, it would be more reasonable to consider it as having originated in the basin south of the main Granite Ridge.

Texas Panhandle acreage by counties and formations for all but non-commercial undeveloped leases.



Deep Oil Aspects

In the Panhandle the term "deep oil" is used to refer to the production occurring in pre-Pennsylvanian rocks. The depth of these possible oil producing formations may range from 5000 feet to more than 8000 feet. In several places, however, pre-Pennsylvanian production



DOWN-TIME SAVERS

NOW - *And* FOR YEARS TO COME

The operators of these leases are prepared for production troubles that may come in the future. They've invested in quality and they'll get back dividends, year by year, in the dependable, uninterrupted performance of their Parkersburg Pumping Units. There'll be less down-time, fewer repairs, lower maintenance costs, minimum trouble. Too, these operators can depend on the reliable field service that is behind every Parkersburg product. Yes, they're assured a lower lifting cost, not only this year but for years to come.

Photograph shows Type BC 54" stroke unit. Inset shows Type SC 10' stroke unit. Parkersburg builds a unit for practically every pumping condition. Call the Parkersburg representative nearest you for details. His location and number is in your Composite Catalog.

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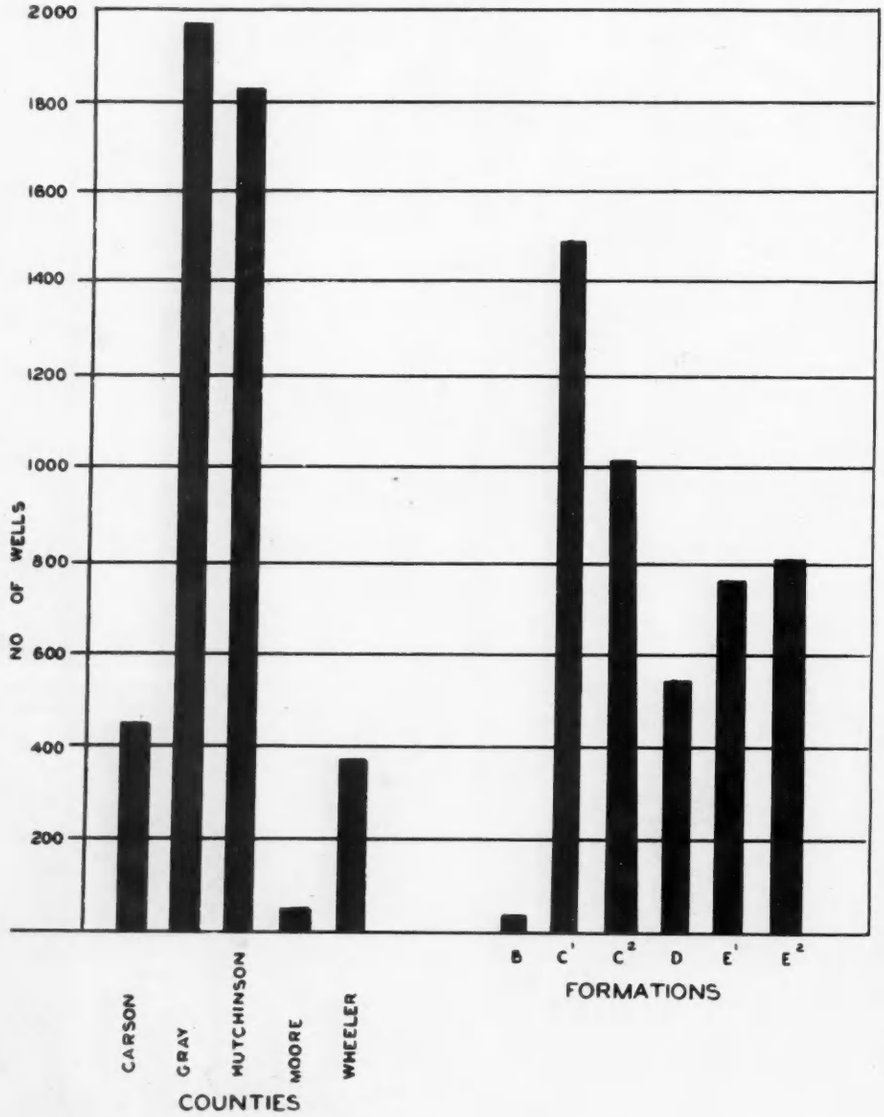
may result at shallower depths, but in these cases it may be doubtful whether the formations are in place or are just re-worked older rocks. This is true particularly of the oil occurring in formations mapped as Ordovician in central Wheeler County (see Subsurface insert Geologic map in Jan. 2, 1939, issue of The Oil Weekly).

The pre-Pennsylvanian oil prospects in the Panhandle are very favorable. However, if this "deep oil" is ever discovered, it most likely will underlie areas which are barren in the shallow Permo-Pennsylvanian series.

These potential deep-producing areas, in most cases, exist well in the basin, either north or south of the Granite Ridge, and on structures which occur off the main Granite Ridge. They no doubt have closures of their own and are not controlled, ostensibly, by the ridge structures although they most likely were affected superficially by the same influences which formed the main ridge or Permo-Pennsylvanian structures. The exception to this is the oil trend in north-central Moore County wihch lies at the western end of the ridge and which has a potential possibility below the depth of 7000 feet. From work carried on in southern and northeastern Moore County it seems fairly definite that the Ordovician and the Mississippian beds are present on this structure and over a large portion of Moore County.

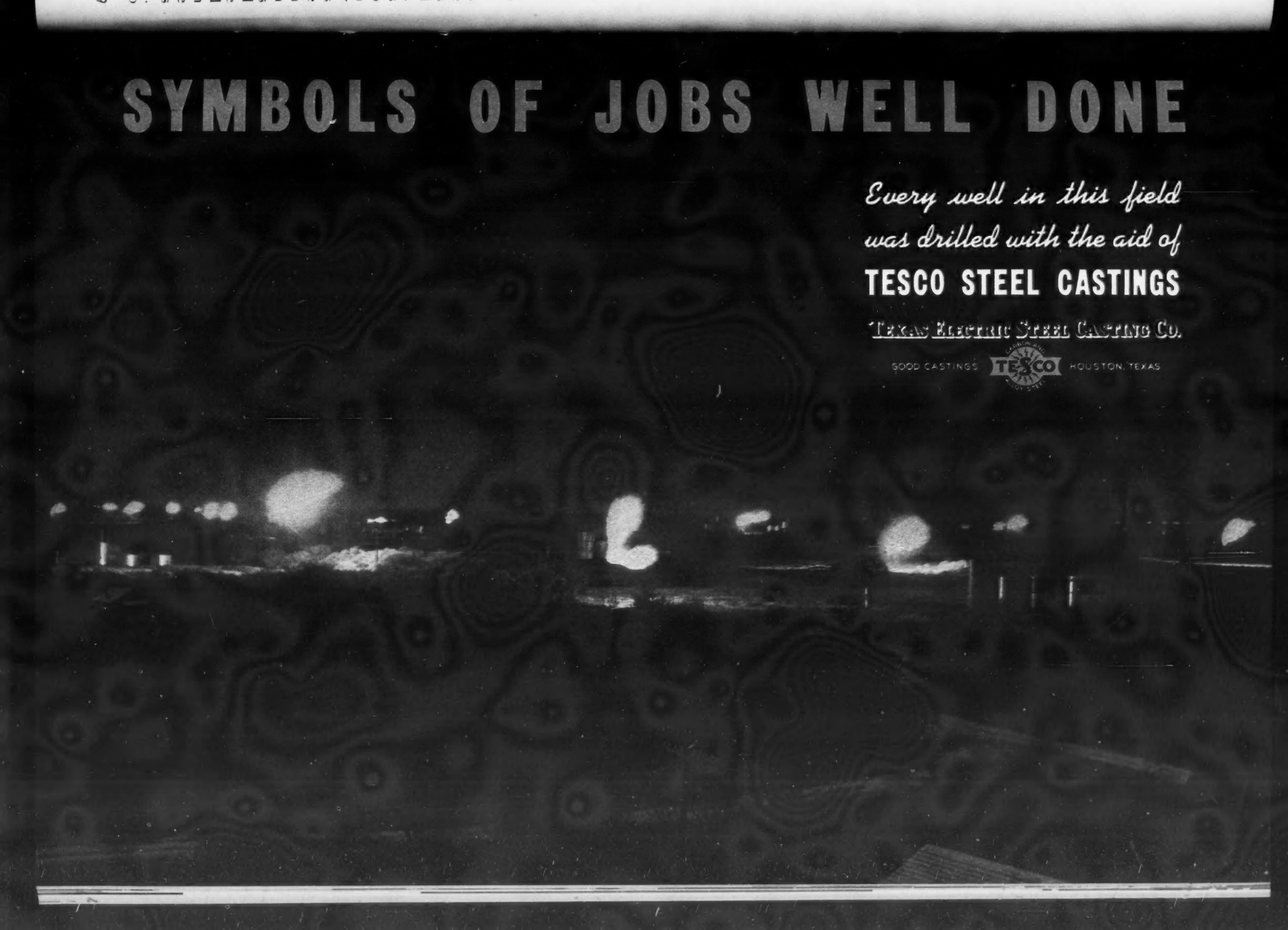
It is possible that the oil which is present in the Permo-Pennsylvanian formations and located on the north flank of the Granite Ridge is really pre-Pennsylvanian in age and has migrated upwards from these beds into the granite wash which overlies the upturned and truncated pre-Pensylvanian beds. Assuming that the oil came from pre-Pennsylvanian rocks, then it is possible that structural conditions on the south side of the Granite Ridge are such as to seal off these early formations, thereby preventing the oil from leaving the pre-Pensylvanian formations and entering the overlying Permo-Pensylvanian reservoirs. If the above assumptions are correct, then the absence of oil at shallow depths south of the Granite Ridge may indicate greater possibilities for deep production than on the north side. In other words, it is possible that if pre-Pennsylvanian oil did try to migrate upwards, it could not effect this move on account of overlying formations acting as a better seal than on the north flank.

Texas Panhandle wells by counties and formations.



The areas believed to be worthy of exploration for "deep production" are outlined on the accompanying "Prospect map." These areas are controlled by the presence of Pennsylvanian structures. However, as stated above, it is questionable whether these structures will continue into the pre-Pennsylvanian. The writer recognizes at least six of these structures which would justify some development. The Wilson structure in northeastern Moore County already has a deep test of 8000 feet (Phillips Petroleum Company's Wilson 2) and although no oil was encountered, a good section of pre-Pennsylvanian rocks was penetrated, the well being abandoned as dry in the Arbuckle formation. A hundred-foot section of Wilcox strata was identified definitely. Of course, this one dry hole does not condemn the entire area, as it is the only deep test in many square miles, and especially since there is no surety that the test is located on a pre-Pennsylvanian structure. When the Wilson deep test was drilled there was practically no available geological information other than some magnetometer work. Since the drilling of this test, dozens of shallow wells have been completed in this area which have indicated that the Wilson high is located several miles farther west than it was believed to be originally. So even if the Pennsylvanian formations should reflect the pre-Pennsylvanian structures, there still would be the fact that the Wilson test was drilled somewhat off structure. There will have to be more deep

SYMBOLS OF JOBS WELL DONE



Every well in this field was drilled with the aid of

TESCO STEEL CASTINGS

TEXAS ELECTRIC STEEL CASTING CO.

GOOD CASTINGS TESCO HOUSTON, TEXAS

drilling before this area can be condemned definitely.

Another pre-Pennsylvanian possibility is the structure in central Hutchinson County which covers quite a large territory. A deep well (Phillips Elva 12, Tomlinson Survey) on the flank of that high drilled to 5300 feet and was abandoned in Ordovician dolomite (?). The Subsurface Geologic map shows this structure as resembling an extensive gently northeasterly plunging anticline and occurring as a cross fold to the Granite Ridge.

Gray County

The presence of a closed high in northwestern Gray County is problematical since there is insufficient evidence to indicate whether the necessary closure is present to separate it from the main Granite Ridge to the south. Some sort of extensive structural "nose" is there and it is sufficiently distant from the main Ridge, and low enough, structurally, to possess the sections which could carry oil.

The structure on which the Saunders pool is located is one which may be tested eventually. The closure is present in Permian strata, but the presence of the required pre-Pennsylvanian series is doubtful.

Any other "highs" lying off the Ridge, which may be discovered as a result of geophysical work can be determined best only by future exploration. At present, although geophysical work has located Permo-Pennsylvanian structures, their value with respect to pre-Pennsylvanian structures is also doubtful.

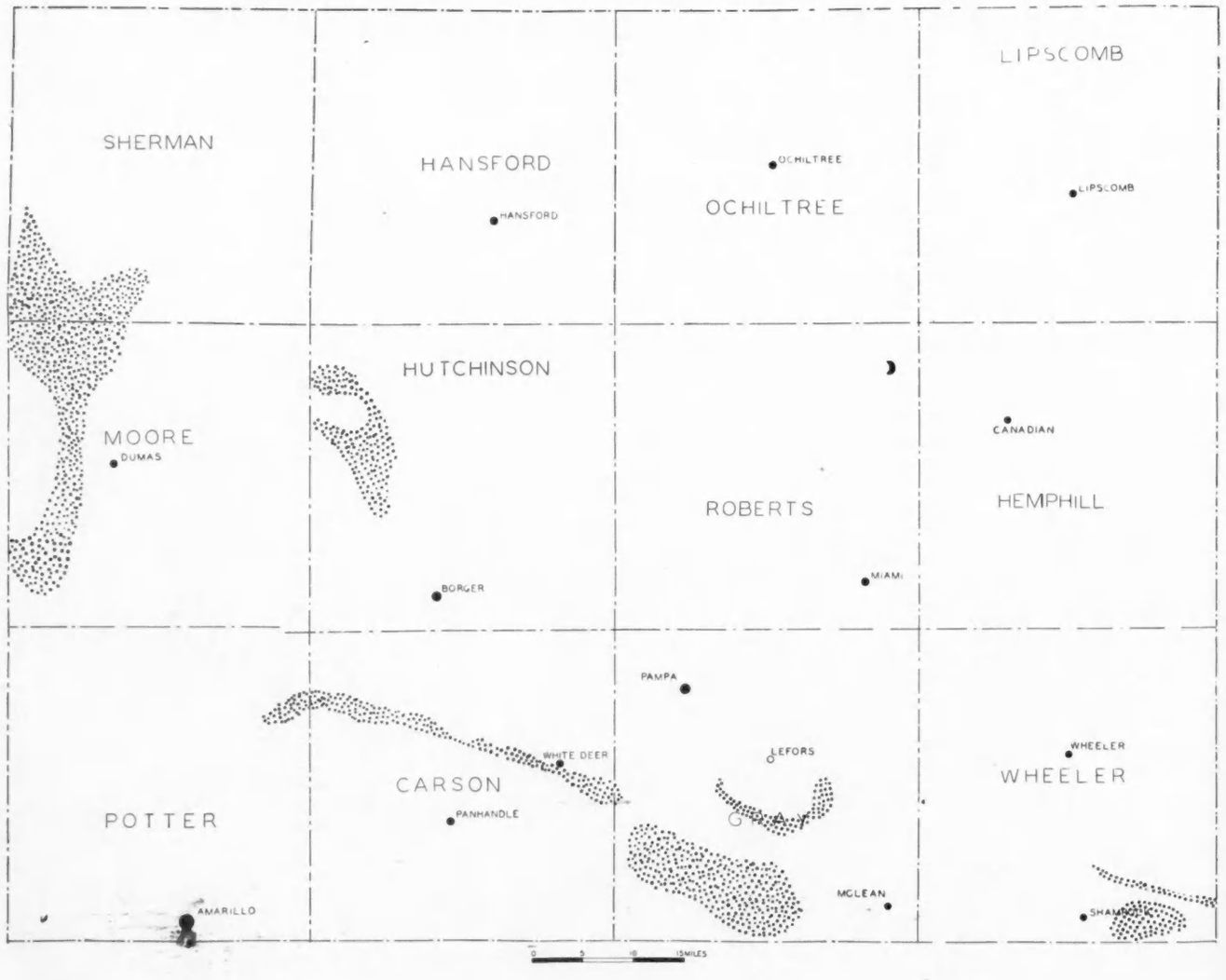
The possibilities of deep production south of the Ridge, in southern Gray County, are too indefinite and extensive to permit any statement at the present time.

Wheeler County

In Wheeler County the most important location for deep production is the suspected high located in the central part of the county, about a couple of miles due south of the town of Wheeler. This feature is usually mapped as a plunging anticline or "nose" extending at right angles to the axis of the main Granite Ridge cut by the Wheeler County fault. Just how this anticline reacts under the influence of this faulting is questionable. The general impression is that it continues out into the Anadarko Basin on the downthrown side of the Wheeler County fault, and that the highest part of the structure is immediately adjacent to the fault. However, it seems plausible that this subsurface structure is not a "nose" with the upper end truncated by the fault. Instead, it seems reasonable to connect this structure with a general structural trend

Prospect Map of Texas Panhandle

Stippled areas show regions that have not been definitely disproved for shallow oil production and may be potential oil pools.



of folding located north of the fault and paralleling it along the entire length of Wheeler and Beckham (Oklahoma) Counties. In this way, the structure would be an east-west oval-shaped dome located a couple of miles south of the town of Wheeler with a low area or "saddle" between the fault and the structure.

Phillips Petroleum Company drilled a 7000-foot test just north of the Wheeler County fault on what seems to be the axis of the anticline. Immediately south of this well and on the upthrown side, a Midwest Refining Company well drilled through 200 feet of granite wash into a thick dolomite section which is believed to be pre-Pennsylvanian, most likely Cambro-Ordovician (Arbuckle). This well was drilled to only 2945 feet and may have had as much as 860 feet of pre-Pennsylvanian. Therefore, it was quite unexpected when the Phillips test, just across the fault and only 1½ miles from the Midwest well was still in granite wash at 7000 feet. The test was abandoned at this depth, never even entering the pre-Pennsylvanian rocks. There is no information available to aid in determining at what depth a well in this area would reach the base of the Pennsylvanian. In any event, the test did not assist in locating the structure, nor did it even affirm or deny its presence. The prospects for deep production on this suspected anticline are unchanged.

Sherman County

There are two important structures in Sherman County which will bear investigation and possibly exploration when the matter of deep production is discussed. The Coldwater structure in eastern Sherman County is the lesser important of the two. The presence of the structure is recognized in magnetometer records, this geophysical instrument being of value in many parts of the Panhandle to locate the approximate position of various Permo-Pennsylvanian structural features. Also, the Coldwater structure is recognized by subsurface geological work, there having been a shallow test (3550 feet) drilled on the flank of it 12 years ago. The well was completed for 15 million cubic feet of gas according to the statement filed with the Railroad Commission. A well in order to test the Ordovician here must be drilled more than 8000 feet to exhaust all possibilities completely.

The I. T. I. O. structure in western Sherman County is a much more pronounced feature, which also has been recognized in both magnetometer and subsurface work. The structure is the northwest member of the I. T. I. O.-Watchorn structural trend extending in a northwest-southeast direction in southwest Sherman and northeast Moore Counties. A saddle located along the Sherman-Moore Counties line separates these two structural features which probably mark the "head" of the Anadarko Basin.

A well recently drilled by the I. T. I. O. Company, supposedly on the apex of the high, was abandoned at 3838 feet in a coarse gray biotitic limy shale of upper Pennsylvanian age. Although this is one of the best locations in the Texas Panhandle for a deep test, there can be only guesses as to the probable pre-Pennsylvanian formations which will be encountered and at what depth. This much seems to be plausible: that the pre-Pennsylvanian is comparatively deep, probably greater than six or seven thousand feet. That they are present over the I. T. I. O. structure seems comparatively assured, and the chances of entering solid granite at shallow depths are not great.

Potter County

An interesting deep test is being drilled, at present, on the Bush Dome in the southwestern part of Potter County. The structure is a Permo-Pennsylvanian dome of great extent on which is located the famous Panhandle helium gas field. The test is being drilled by Parcomis Oil Company (Sinclair Prairie Oil Company) and is contracted for a depth of 8000 feet. The structure is proved definitely to be a subsurface feature by information from numerous wells drilled on it. The dome has been mapped by Torsion Balance by R. H. Andrews.* The two important questions to be answered by this test are: (1) Does the Permo-Pennsylvanian structure reflect a pre-Pennsylvanian one? (2) Are pre-Pennsylvanian sedimentary beds present? Of course, with regard to the latter, there must be recognized also the fact that oil could be discovered in the lower Pennsylvanian beds.

In any event, the test is drilling on one of the best structures in the Panhandle for the exploration of deep formations and has very encouraging prospects. Surely a company is justified in making the heavy expenditure required to drill the well.

According to R. H. Andrews, the City of Amarillo is located on a torsion balance structure probably part of the same trend as the Bush Dome and equal in size to it.

There is sufficient evidence to give foundation to the belief that the whole area is covered by Ordovician or Mississippian formations, or both. This is true except on the crest of the Granite Ridge. Much deep testing will be required before the Panhandle can be proved definitely to be either productive or dry from the older formations.

From the above discussions it will be appreciated that the Panhandle is worth considering for exploration of deep production and that there exist numerous favorable structures to explore.

Acknowledgments

The writer wishes, particularly, to express his appreciation to Miss Elizabeth Sandig for her untiring work in making the calculations and constructing the tables. Further acknowledgment is made for the helpful suggestions of G. L. Knight, geologist, Phillips Petroleum Company, and John Galley, geologist, Shell Production Company; and finally his sincerest gratitude to all the Panhandle geologists for their earnest cooperation by permitting the use of well-cuttings and necessary production data; in particular Larry Oles, district superintendent, and Don Benson, geologist, Sinclair Prairie Oil Company; Dave Henderson, geologist, Stanolind Oil and Gas Company; Ollie Lloyd, geologist, Magnolia Petroleum Company, and Ben Pilcher, geologist, The Texas Company.

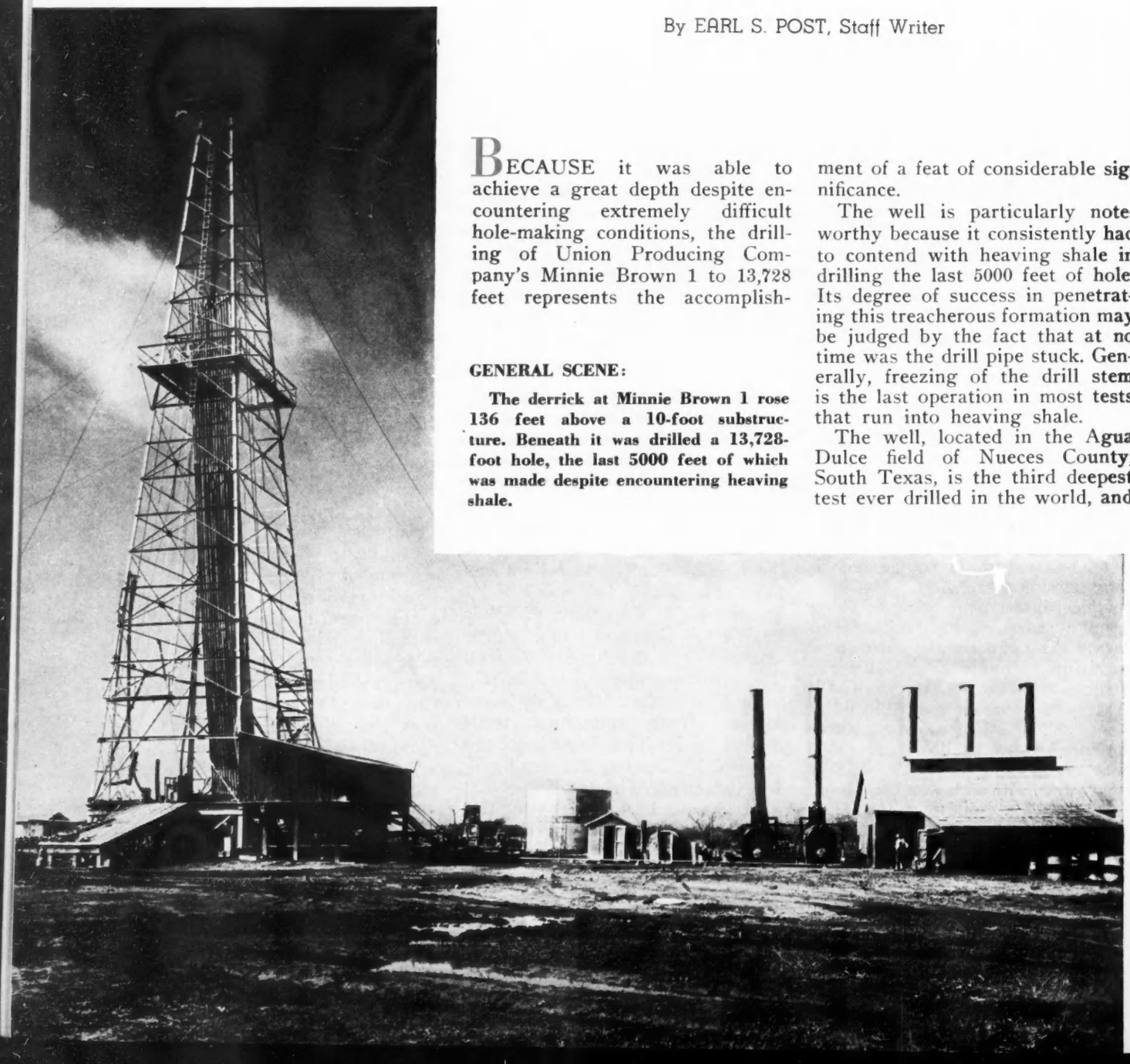
(Concluded)

*Torsion balance contractor, Dallas, Texas.

World's Third Deepest Test Drills Record Heaving Shale Body

Difficult drilling in the form of 5000 feet of heaving shale is penetrated in reaching 13,728 feet.

By EARL S. POST, Staff Writer



BECAUSE it was able to achieve a great depth despite encountering extremely difficult hole-making conditions, the drilling of Union Producing Company's Minnie Brown 1 to 13,728 feet represents the accomplishment of a feat of considerable significance.

The well is particularly noteworthy because it consistently had to contend with heaving shale in drilling the last 5000 feet of hole. Its degree of success in penetrating this treacherous formation may be judged by the fact that at no time was the drill pipe stuck. Generally, freezing of the drill stem is the last operation in most tests that run into heaving shale.

The well, located in the Agua Dulce field of Nueces County, South Texas, is the third deepest test ever drilled in the world, and

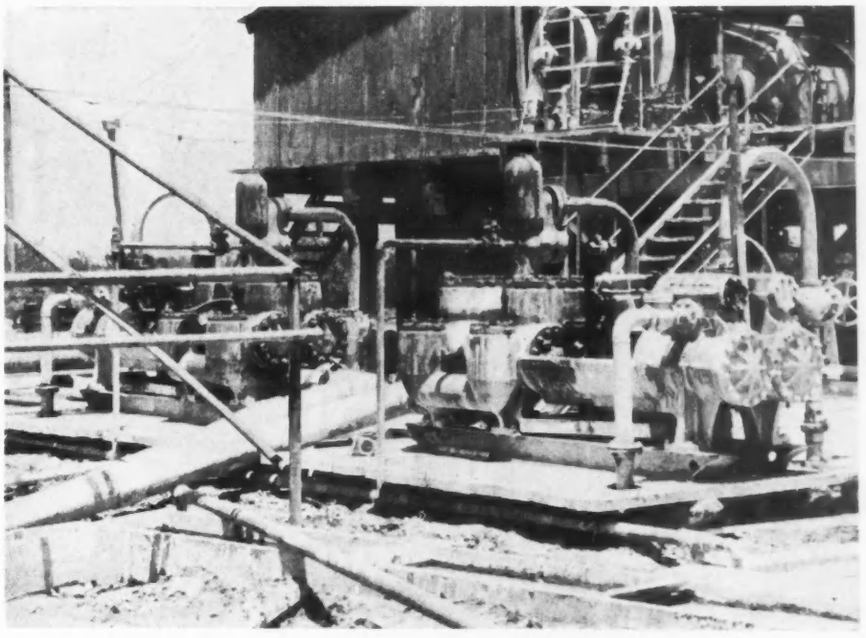
GENERAL SCENE:

The derrick at Minnie Brown 1 rose 136 feet above a 10-foot substructure. Beneath it was drilled a 13,728-foot hole, the last 5000 feet of which was made despite encountering heaving shale.

establishes a new depth record for territories outside of California.

The defeat of so thick a section of heaving shale is of great economic and technical importance. It encourages further exploration of areas where this formation has been an obstacle, and there are many such sectors in the Gulf Coast region of Texas and Louisiana. It has been predicted that large quantities of oil will underlie heaving shale horizons in many instances, and this well may be the forerunner of successful efforts to drill through the zones to test lower prospects.

The records and achievements of this well are of interest and value, but of outstanding value are the methods used in combating the heaving shale section. A separate article on drilling methods used appears in this issue.



MUD HANDLING:

Two slush pumps provided pump circulation at 1800 pounds pressure. At the end of the operation a 14x7¼x14-inch and a 14x6x18-inch pump were compounded together. Two other pumps were used for mud mixing and gunning the pits.

Drilling Methods

It is possible that drilling methods used on this well may constitute at least a part of the long sought answer to the problem of fighting these tricky shales. Of interest was the lack of any special technique in performing drilling operations. A most important phase was the careful supervision and extreme care exercised at all times. Mud was the outstanding contributing factor in the drilling of Minnie Brown 1.

After encountering heaving shale, silicate mud was used, and its physical and chemical properties were checked and controlled constantly. All cuttings from the hole were removed from the stream to eliminate contamination. The mud was weighted to an average of 13 pounds per gallon with the funnel viscosity averaging 28 to 30 seconds, 1500 centerpoise in and 500 out. It was deemed advantageous to install a mud cooling system because of the rising temperature shown by the returning fluid. This device consisted of a series of nozzles through which the mud was sprayed into a cooling pit, which was covered to protect its contents from the weather.

At all times, the drilling personnel made note of the pressure and speed of pumps, torque and other factors that would reveal the condition of the hole, and steps were taken immediately to correct any undesirable situation indicated.

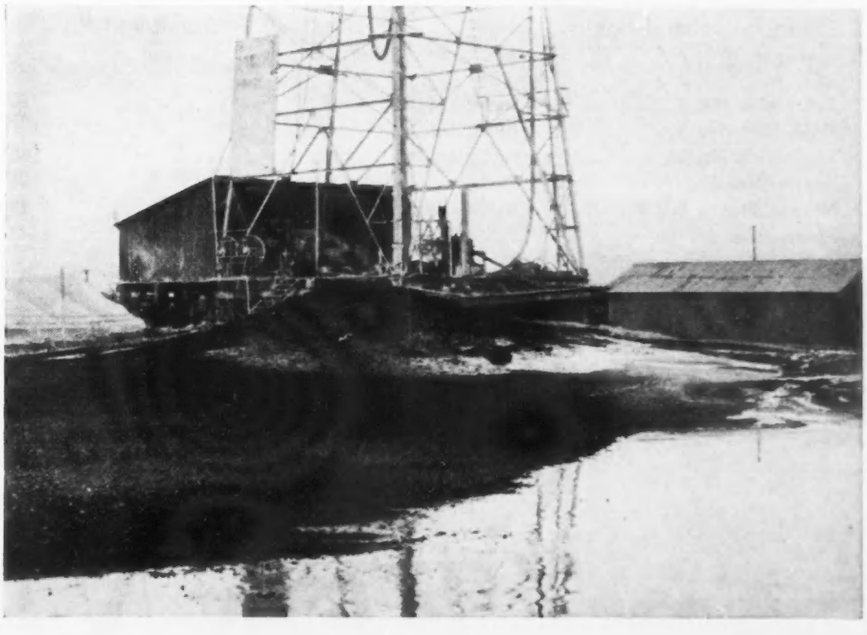
Excessive pump pressures were never applied in times of trouble, as it was believed this would cause tighter squeezing or packing of a bridge. Some times, when the pipe was partly frozen, the pumps were shut down and the pressure bled off with the result that the pipe came free.

When coming out or going into the hole, the pipe was handled with great caution. It was removed or inserted slowly and care was taken to locate all tight spots. Whenever a tightening of the hole was noted, the point would be washed and reamed until properly conditioned.

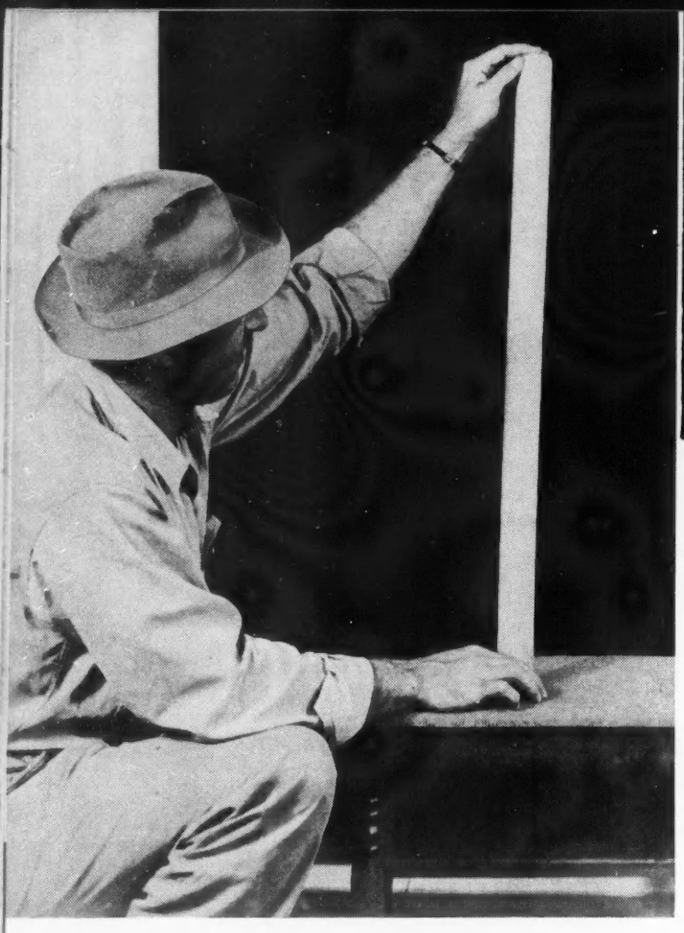
A weight limit of around 1 point was adopted. While it was found too much weight would tend to cause the bit to ball up, this action was designed primarily to keep the hole vertical.

It was known in advance that Minnie Brown 1 would be a deep

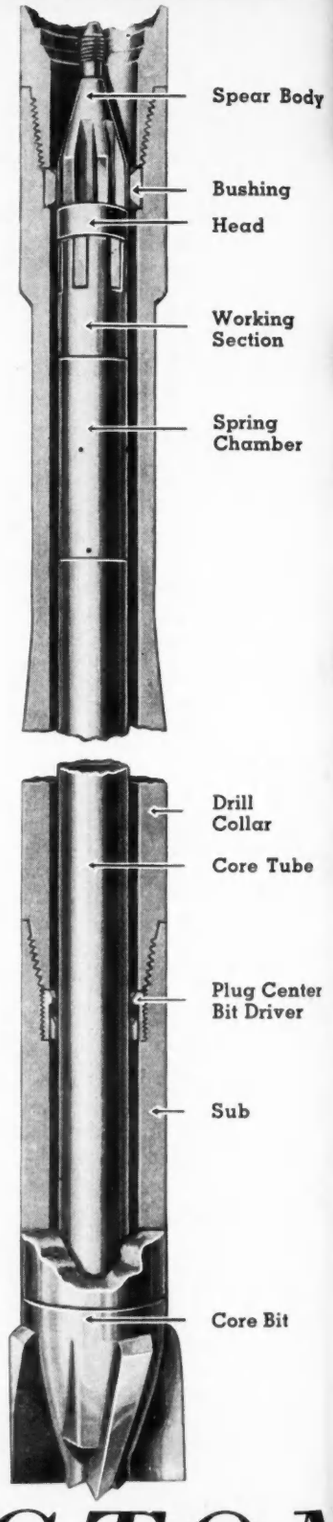
Removal of all cuttings from the mud stream resulted in the pile of heaving shale shown below.



635 CORES



One of 18 cores taken with the Pennington Signaling Core Barrel . . . 10,676' to 10,873' . . . Minnie Brown No. 1.



Cross sectional drawing of the Pennington Signaling Core Barrel, Wire Line Type, is shown at right, with detailed description. The following specifications cover the Pennington Barrel used on the Minnie Brown test: 2½" core tubes . . . 1⅞" diameter cores . . . 2½" diameter plug center bits . . . top connection on drill collar, API full hole, with double pin sub connecting to a 60-foot, 5¾" OD drill collar, 3" hole therethrough.

Use of the Pennington Signaling Barrel on this outstanding test was no trial job with these operators. They have taken 635 cores in Agua Dulce and Refugio fields with our barrel in 14 months, including the following:

Schroeder No. 1	Agua Dulce	54
Golloday No. 1	Agua Dulce	131
Simmonds No. 1	Agua Dulce	286
Power No. 9	Refugio	103
Minnie Brown No. 1	Agua Dulce	18
Rivers No. 4	Agua Dulce	43
		635

Copy of Pennington's CORE DRILLING MANUAL, a 20-page illustrated story of successful coring, will be sent you immediately, upon request.

PENNINGTON

HEADQUARTERS & PLANT: 319 Dakota Street, San Antonio, Texas

WITHIN 14 MONTHS

For

UNION PRODUCING COMPANY

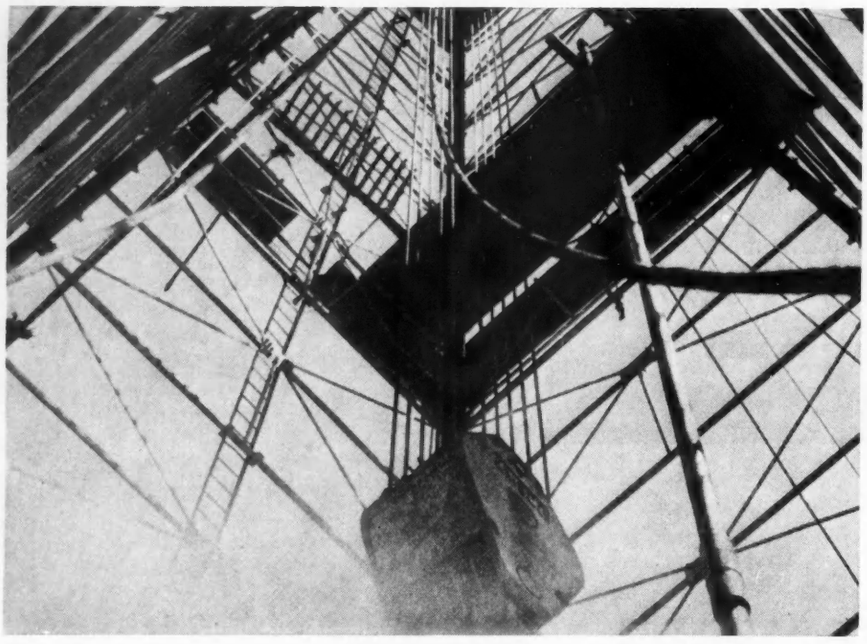
Agua Dulce and Refugio Fields . . . with Highest Average Recovery Greater Rapidity Greater Safety

Union Producing Company's Minnie Brown No. 1, which recently reached 13,728', the deepest hole in the world, except for California.

Union Producing Company's Minnie Brown No. 1 test, Agua Dulce, Texas, which recently attained a total depth of 13,728 feet, performed an outstanding job of determining the value of deep information. Aside from California's world record, Minnie Brown No. 1 is the deepest hole ever drilled. It represents a fortune invested in valuable sub-surface data. Considering the handicap of heaving shale most of the distance, plus the extreme depth successfully drilled, the operators performed an admirable record . . . and we are proud to be among those whose equipment was selected to do the job.

SIGNALING CORE BARREL

BRANCH SERVICE STATIONS: Houston, Corpus Christi and Mission, Texas; New Iberia, Louisiana



HOISTING:

Despite handling very heavy weights, such as 4125 feet of 16-inch 84-pound casing and 8007 feet of 10-inch 50.5-pound casing, hoisting was accomplished without difficulty.

The 300-ton traveling and crown blocks were strung with ten 1⅛-inch wire lines.

●

The only new piece of machinery installed when the well started was a 10-inch unitized drawworks. It was driven by a 14x14-inch steam engine.

test, and engineers of Union Producing Company predetermined a casing program that was followed very closely in the actual operation. The pre-planned casing program was based on knowledge of upper strata, and had an important bearing on the successful drilling of the well. The plan called for large diameter casing so that the hole would not become too small.

The well commenced drilling on January 28, 1938, and on December 30, 1938, or 48 weeks later, it was bottomed at 13,728 feet awaiting orders to plug back for production tests up the hole.

A 28-inch hole was drilled from the surface to 410 feet, when a welded string of 21½-inch pipe was set and cemented at 399 feet. The test then proceeded to 4225 feet with a 20¼-inch hole; a string of 16-inch 84-pound casing was landed at 4128 feet and cemented with 1500 sacks of cement to shut off water sands between 3700-4100 feet.

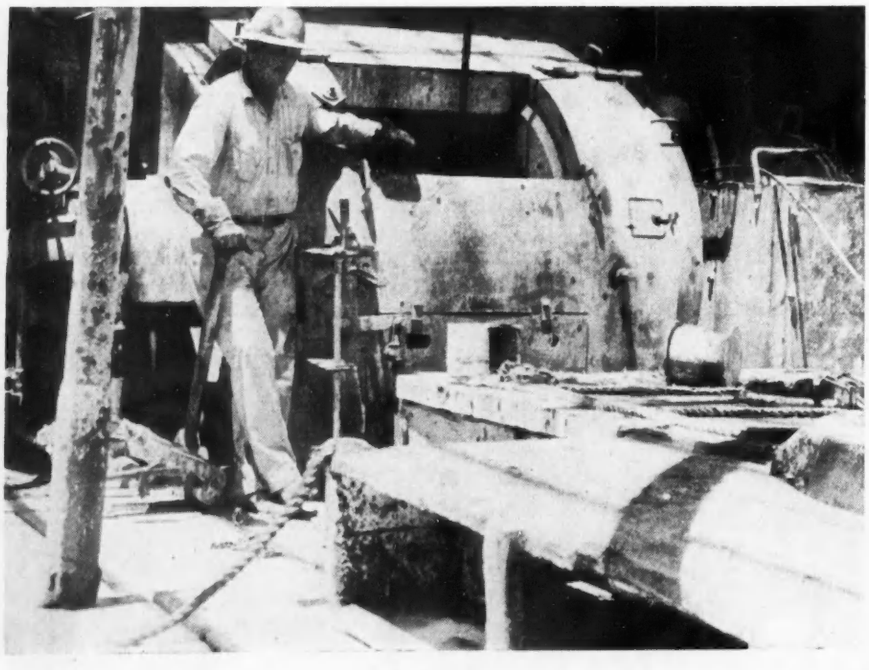
After drilling to 8024 feet with a 14¾-inch hole, a string of 10-inch casing was landed and cemented with 800 sacks at 8007 feet. This pipe weighed 50.5 pounds per foot.

These three strings of casing were handled without difficulty despite their great weight, and each was set approximately at the pre-planned depth.

The hole below this level was 8⅞ inches to 12,880 feet, where it was reduced to 8⅝ inches.

Another string of casing had been planned to be set in the shale section, but while being run, indications were that the hole would not allow it to reach the desired level. Rather than take a chance of ruining the hole in attempting to get to the bottom with this string, the portion that had been run was pulled and drilling resumed. For this reason, the company drilled a large section of shale with the hole open. Had this string of pipe been run, it would have protected the hole from cavities between 8800 and 9500 feet, where the shale gave greater trouble than anywhere else.

Actual drilling of Union Producing Company's well to the 8000-foot level was similar to most Gulf Coast deep operations, regular weighted muds being used to overcome the possibilities of a blowout. The Agua Dulce field has a series of high-pressure sands between 4600 and 7000 feet that must be watched carefully if wells are to be kept under control.



Regular Heavy Duty Equipment

The drilling of this well further demonstrates the ability of modern heavy-duty rotary drilling equipment to explore to great levels. The rig, with the exception of the draw works, had been used previously in drilling several other deep operations in the Refugio and Agua Dulce fields.

The 136-foot relegged derrick rested on a steel substructure rising 10 feet above the ground. The footings and other foundation construction were of concrete. The derrick remained in perfect alignment throughout the operation, it

not being necessary to level it up even once.

A 27½-inch oil-bath rotary table was operated by a direct-connected 7¾x7-inch vertical twin-cylinder steam engine, at 90 to 100 revolutions per minute.

The traveling and crown blocks were strung with ten 1⅛-inch wire lines. Hoisting was accomplished with a 10-inch completely unitized draw works equipped with a hydromatic brake. Power for the draw works was obtained from a 14x14-inch steam engine.

Drilling power was generated in five 125-horsepower 300-pound working pressure boilers. The early part of the operation was made with power from three boilers, but lower in the hole when added steam capacity became necessary, the battery was increased to the final five.

At the end of the operation, a 14x7¼x14-inch slush pump was compounded with a 14x6x18-inch pump, which provided circulation at 1800 pounds at about 28 strokes per minute. Two other pumps were used in mixing and gunning the mud pits.

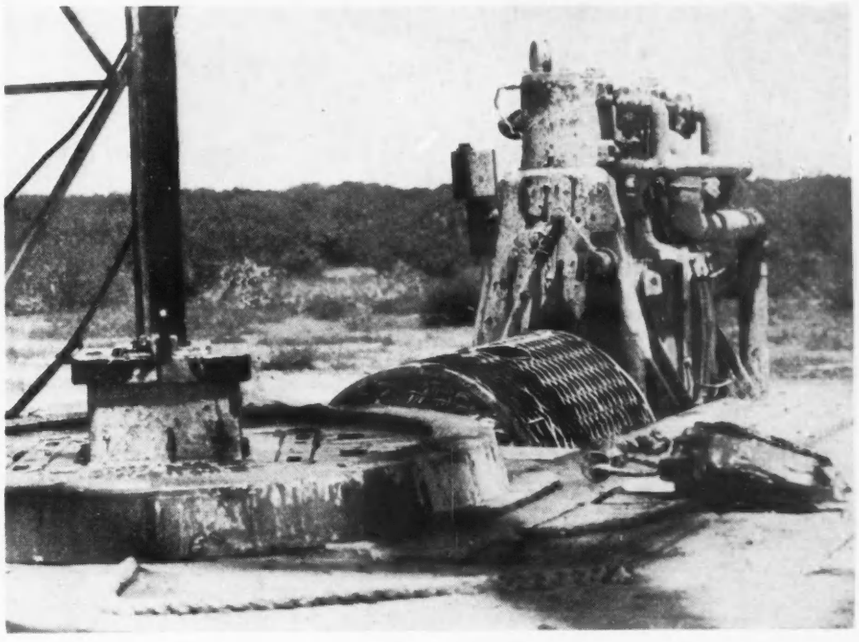
Special pressure equipment was used on the well. A special set-up of blowout preventers was operated by hydraulic pressure. The assembly consisted of 13⅜-inch 6000-pound test equipment that included two preventers with a master gate below them.

Generally speaking, rock bits and fish tail bits were used as the formation demanded, but below about 8500 feet the hole was drilled with fish tail and wire-line core pits.

The drill pipe to 8007 feet, where the last string of casing was set, was 5 9/16-inch A. P. I. full-hole with a weight of 25.5 pounds per foot. The tool joints were full-hole type welded to the stem. Below 8007 feet to the bottom of the hole, 4½-inch A. P. I. full-hole drill pipe weighing 16.6 pounds to the foot was used.

Many Cores Taken

There was no coring in the upper part of the hole, the first core being taken at 8075 feet. Below 10,676 feet, hole was made with core heads, and wire line cores were taken. The last footage made was a core taken from 13,725 to 13,728 feet. The cores were pulled with rotation but not under circulation, although a circulating head was used as a precau-

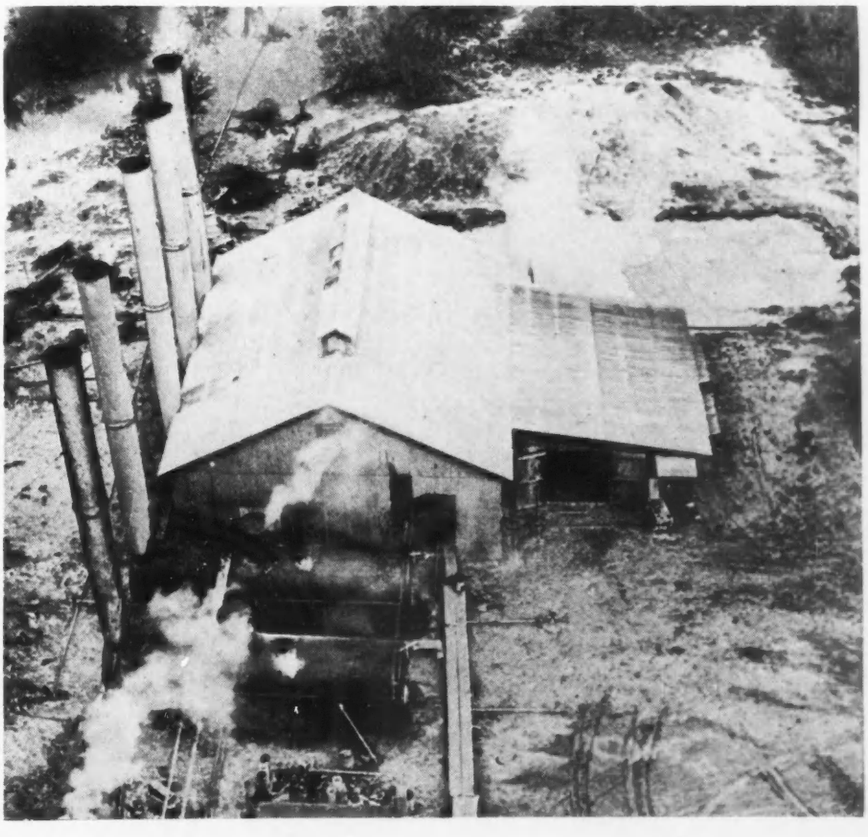


ROTARY TABLE:

The 27½-inch rotary table was direct-engine drvien at an average speed of 90 to 100 revolutions per minute in drilling the heaving shale section found in Minnie Brown 1.

STEAM PLANT:

The three boilers inside of the house originally supplied the power for Minnie Brown 1, but when additional steam capacity was needed the other two were installed. All were 125-horsepower, 300-pound working pressure boilers.



CONTINENTAL

Supplied Much

Major Drilling Equipment

for the

Union Producing Company's

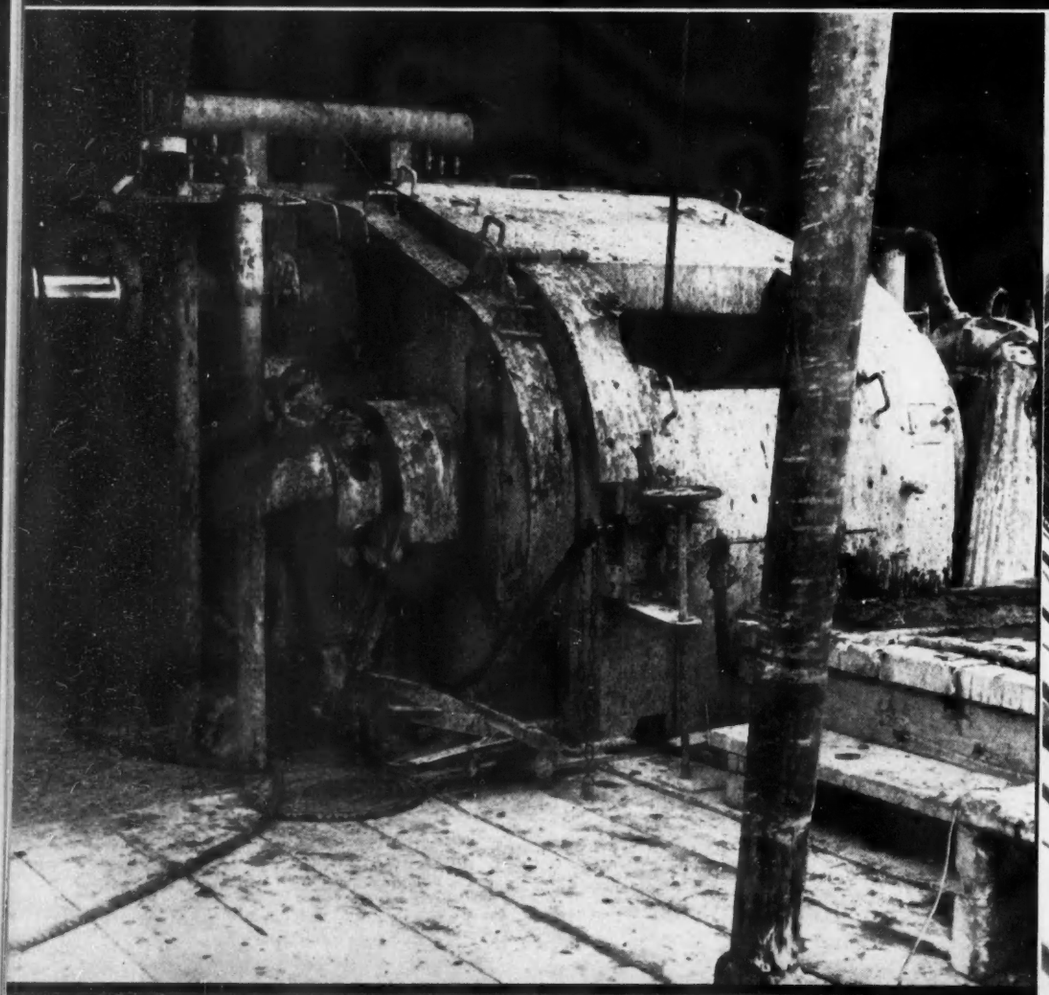
Deep Test

Minnie Brown 1

Total Depth 13,782 Fe

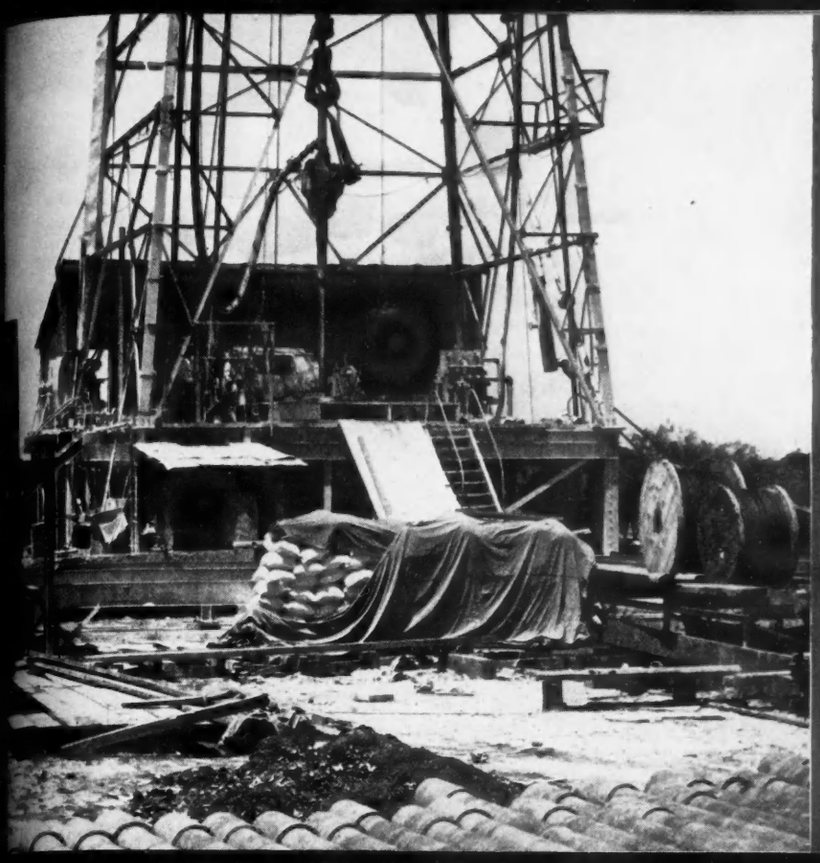
EMSCO DRAWWORKS · · · EMSCO SWIVEL · · · · C

FARRAR & TREFTS BOILERS · · · 8000 FEET Y



Emsco UBLS-54-10 Drawworks with water-cooled brake rims, pressure-spray lubrication and CB brake and equalizer made speed and safety in deep-hole drilling a reality.

Emsco Type EC 6-sheave Crown Block, 76" 5-sheave Traveling Block and Type CA-300 Swivel gave assurance of complete safety and dependability throughout the entire test.



8000' Youngstown 5-9/16" O.D. API Seamless Drill Pipe was used on Texas' deepest test.

.. CROWN BLOCK and TRAVELING BLOCK
T YOUNGSTOWN SEAMLESS DRILL PIPE

Using these six major pieces of drilling equipment purchased from The Continental Supply Company, The Union Producing Company reached a new record depth for Texas when the Minnie Brown I was carried to 13,782 feet in Nueces County on December 21st.

The knowledge and experience gained in more than twenty-seven years' constant service to the oil and gas industries enables The Continental Supply Company, in cooperation with associated manufacturers, to provide the best equipment for every type of drilling operation.

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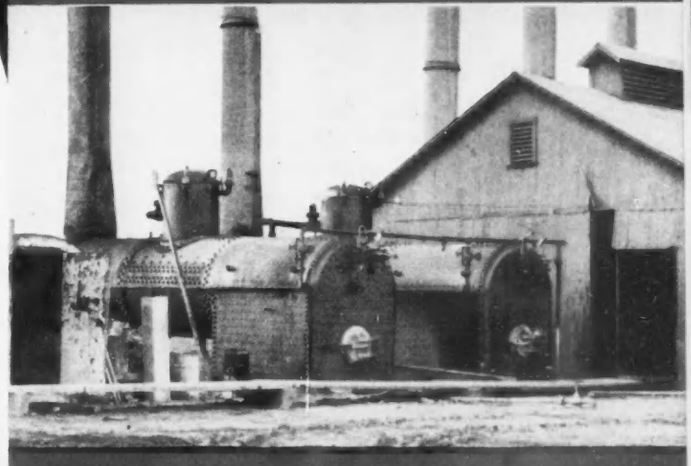
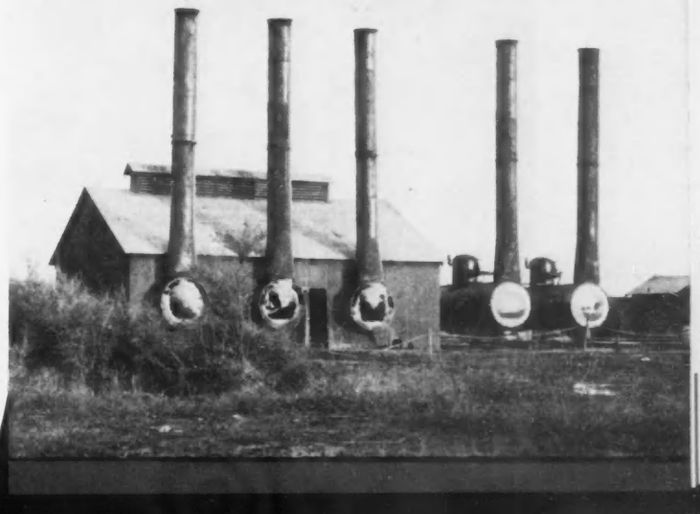
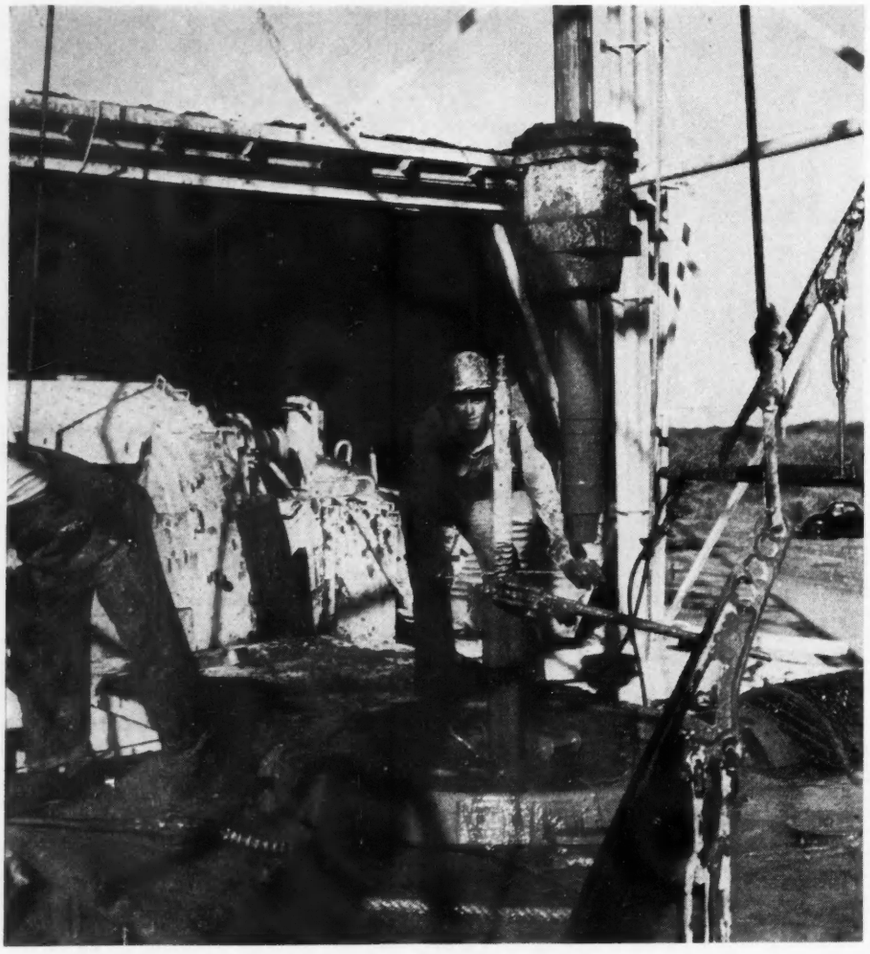
CONTINENTAL

"Serving the Oil and Gas Industries"



Farrar & Trefts 125 H.P., 300 lb. W.P. Boilers, noted for their efficiency, provided an adequate steam supply to penetrate more than 5000' of heaving shale.

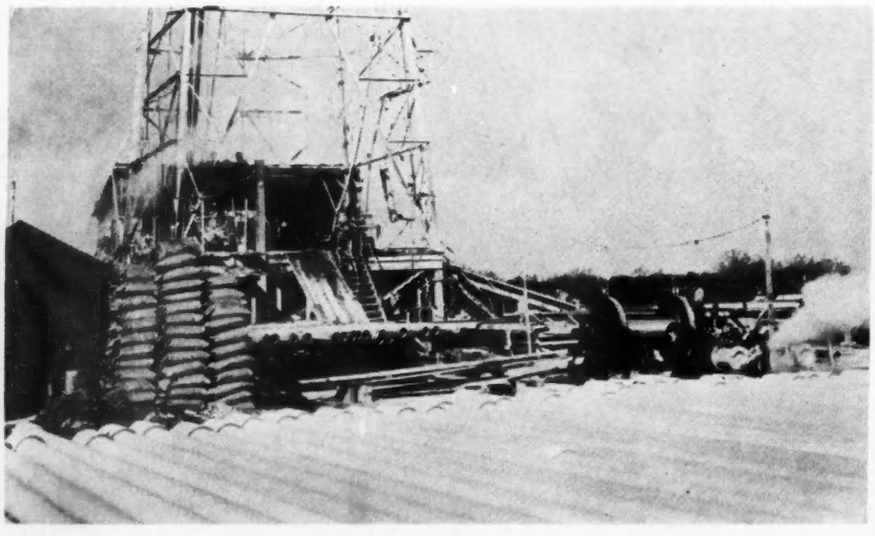




CORING

Many cores were taken below 8075 feet. A total of 77 cores were made below 10,676 feet. The last footage made was a core taken from 13,725 to 13,728 feet.

The sand reel used for retracting the core barrels, shown below, had a capacity of 16,000 feet of 5/8-inch line.



tion against a possible "kick" of the well. The sand reel used for retracting the cores had a capacity for 16,000 feet of 5/8-inch line.

The well was surveyed several times with an electric logging device.

The hole was checked for vertical direction at regular intervals, including the portion of the test in the shale. That the hole was practically vertical to 8007 feet, where the 10-inch casing was landed, is considered remarkable because of the formations that were penetrated. At approximately 10,500 feet, the hole had drifted 5 degrees from vertical. It was brought back to almost 3 degrees deviation, but thereafter gradually drifted from plumb until it was about 11 degrees off at bottom.

World's Third Deepest Test

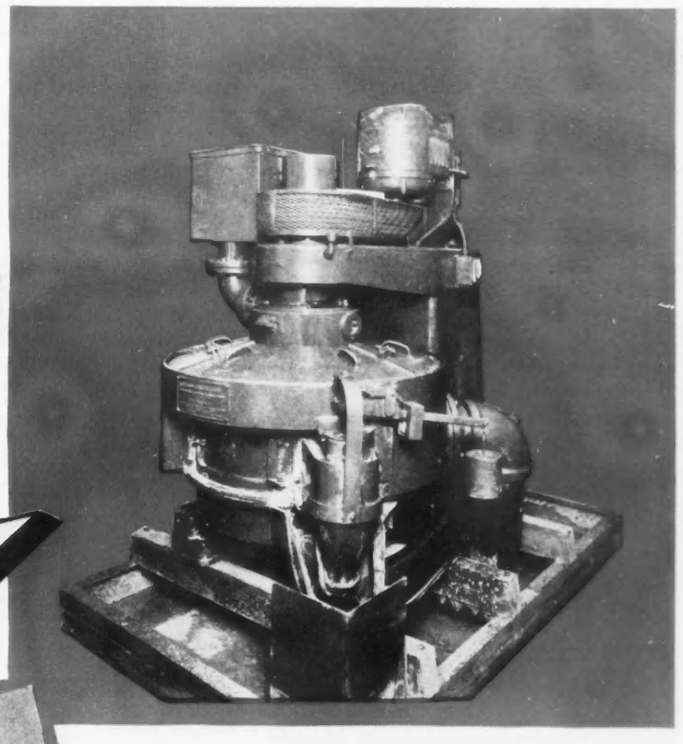
Union Producing Company's Minnie Brown 1 became the deepest test ever drilled in Texas when it exceeded, on November 22, 1938, the 12,786 feet drilled by Gulf Oil Corporation's McElroy 103 in the McCamey field back in 1935. Thereafter, the well consistently broke records. It became the deepest well outside of California when it exceeded the 13,409-foot record of Fohs Oil Company's State Bay Baptiste 1, Terrebonne Parish, Louisiana. The honor of being the third deepest test in the world came when it surpassed Continental Oil Company's KCL A-3-8, which went to 13,644 feet in the Wasco field of California. The second deepest test in the world is Superior Oil Company's Helbling 1, Rio Bravo field of California, which reached 14,020 feet, while the deepest test ever drilled is Continental Oil Company's KCL A-2, which went to 15,004 feet in the Wasco field. However, the two tests that exceed it in depth did not encounter the difficult drilling conditions that were found by Minnie Brown 1.

Geological Data

Of vital interest to South Texas and the Gulf Coast was the stratigraphic information yielded by the drilling of Minnie Brown 1. This test was the first along the South Texas Gulf Coast to penetrate the Cockfield formation at this depth. Work along this trend has heretofore been confined to the prospecting of the beds lying above the top of the Jackson group. The new operation, however, failed to find a single sand body in the entire Jack-

MERCO

Used to Recondition MUD in UNION PRODUCING CO.'s *MINNIE BROWN No. 1



*World's second deepest well—13,728 feet! Penetrated 5,721 feet of heaving shale with open hole! Congratulations!

. . . The DEEPER they are the more they need MERCOS!

Unusual hazards encountered in deep drilling and with heaving shale require special attention to mud conditioning.

Costly abrasion, twist-offs, loss of mud weight and caving all lead to loss of time and money and even jeopardize the successful completion of the well.

Merco Centrifugals have been used to remarkable advantage in continuous reconditioning of drilling fluid and in the successful elimination of many risks associated with deep drilling.

MERCO CENTRIFUGAL COMPANY
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An article describing the drilling program used in penetrating the heaving shale section encountered in Union Producing Company's Minnie Brown 1 appears on page 52 this issue.

son, Cockfield, and that portion of the Yegua penetrated.

Minnie Brown had a derrick floor elevation of 105 feet. The Heterostegina sand series was encountered between 3710 and 4240 feet. The top of the Vicksburg is placed in the well at 7380 feet, the top of the Jackson group was found at 8237 feet. Textularia hockleyensis occurring at 8822 feet. The Cockfield formation was topped at 10,584 feet and the Yegua was encountered at 12,000 feet. At the total depth of 13,728 feet, no beds older than Yegua had been penetrated.

The thicknesses of the Jackson, Cockfield, and Yegua formations are of particular interest, the Jackson being 2347 feet, the Cockfield 1416 feet and the Yegua in excess of 1728 feet. This indicates a rapid coastward thickening of these beds, since in the Pettus territory, where the Cockfield is found at depths of 4000 to 5000 feet, the Jackson interval is about 1100 feet thick, the Cockfield about 300 feet and the Yegua about 600 to 700 feet thick.

Men Who Worked on the Minnie Brown 1

C. A. McDOWELL
District Manager

Personnel is an important factor in any achievement or undertaking. Naturally, it would have been impossible for Minnie Brown 1 to have written the history it did without men doing their duties properly.

The loyalty and intelligence of the four drilling crews, considerate and skillful supervision, careful performance of all jobs, and cooperation between all the different departments were prominent factors on the well.

On this and the following two pages appear pictures of superintendents, engineers and drilling personnel that worked on Minnie Brown 1.

Three men that played important roles, but whose pictures do not appear, are: Orien W. Van Dyke, engineer; D. M. Miller, geologist; and Fred P. Shayes, district geologist.

A. F. SONBERG
District Superintendent of Drilling and Production

A new WORLD'S RECORD with

REED'S B-R WIRE LINE CORING-DRILLING OUTFIT

WHICH WAS USED

EXCLUSIVELY

FROM 10,882 FEET TO 13,728 FEET (Completion)

CONGRATULATING THE EXECUTIVES AND DRILLING CREWS OF UNION PRODUCING COMPANY WHO MADE THIS OUTSTANDING DRILLING RECORD POSSIBLE.

Drilling through the thickest section of heaving shale and sandy shale ever encountered, a bit that would give maximum footage was necessary.

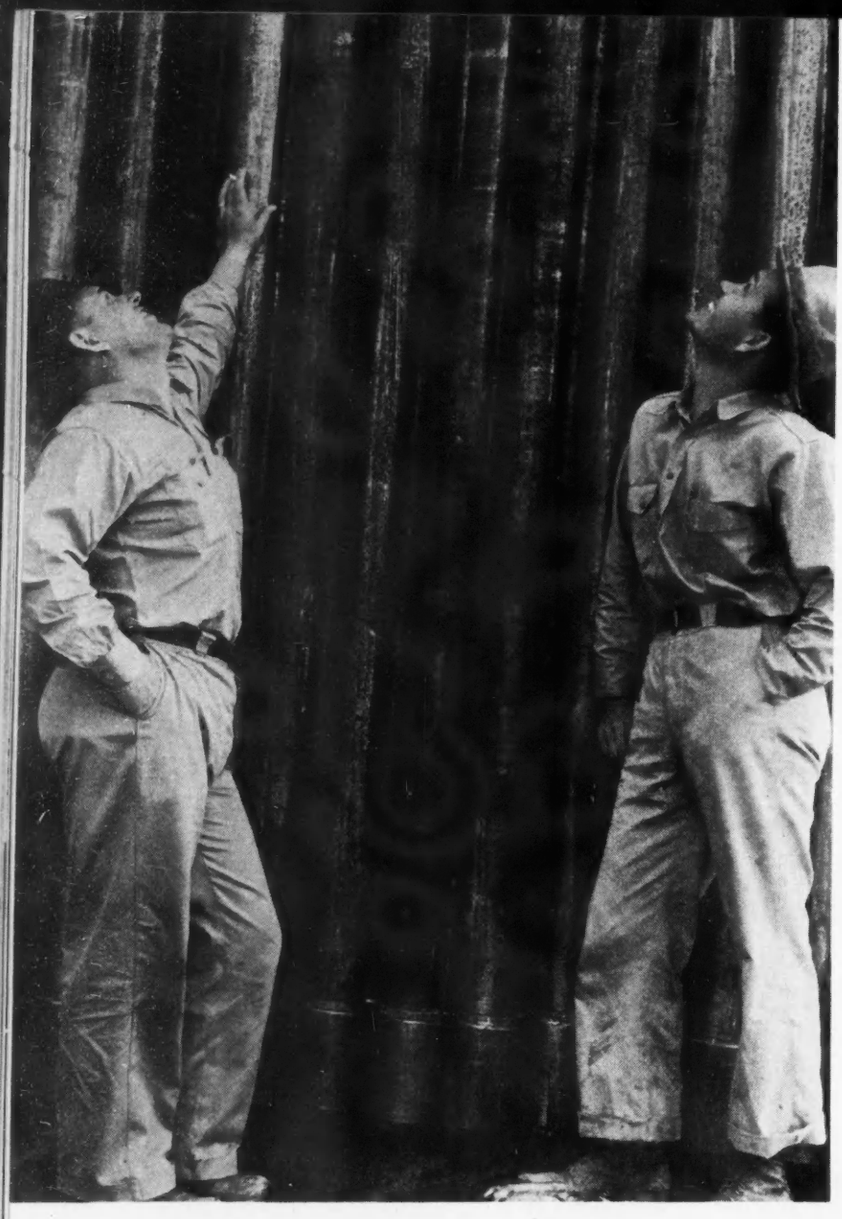
The REED B-R averaged more than 250 hours per bit on bottom, the majority being pulled "green."

Reed B-R Drill Collar 3-Blade Drilling Bit with Core Barrel in position

The Cutter Head—Tested and Proved to Cut Clean Cores Through the Hard Formation Rock Bit Shown

Reed B-R Hard Formation Bit

REED ROLLER BIT CO.



J. A. KELLEY (left above)

Field Superintendent of Drilling and Production, under whose direct supervision Minnie Brown was drilled.

C. A. SULLINS (right above)
Petroleum Engineer

A. M. WIGINGTON
Field Drilling Superintendent

DRILLING CREW ON 6 P. M. TO MIDNIGHT TOUR

Roy Davis
P. L. Garner, driller
A. W. Bruchmiller
Donald Griffith
D. L. Lambreth (squatting)
(Lee Prescott, not shown)

DRILLING CREW ON 6 A. M. TO NOON TOUR

H. L. Bock
F. L. Long
A. L. Herschap (standing in rear)
W. A. Bruchmiller
H. L. Hart
M. W. Melvin, driller

DRILLING CREW ON MIDNIGHT to 6 A. M. TOUR

Lenwood Nelson
Ed Lewis
C. M. Martin
H. J. Sheffield
B. Kelley, driller
G. W. Fincher

DRILLING CREW ON NOON TO 6 P. M. TOUR

Ted McCauley
George Ferguson, driller
M. R. Kelley
G. B. Harding
Floyd Kelley (sitting)
I. C. Clopton (sitting)

MISSION SLIPS • VALVES • PISTONS P

USED ON UNION PRODUCING C

DRILLED to 1

LONGEST STRING OF 4½" PIPE EVER RUN 13,728 feet

Regular

MISSION

Rolling Dog

ROTARY

SLIPS

USED

By running this **world record** string of 4½" pipe, we have proven that slips longer than the Mission standard slips are not necessary for handling the strings of pipe that can be used in drilling.

LABORATORY TESTS PROVE THE SUPERIORITY OF MISSION SLIPS

We have determined the point at which pipe will bottle-up by actual tests in high capacity testing machines. These tests as well as actual field tests—one of which is mentioned above—conclusively prove that our practices in slip design are sound; and in particular that **longer and more expensive slips are not necessary.**

●

CHARTS AND DESCRIPTIVE MATTER COVERING THE ABOVE LABORATORY TESTS, WILL BE SUPPLIED ON REQUEST.

AT LEFT: J. A. (Dutch) Kelley, Field Superintendent of Drilling Production, and Charles A. Sullins, Petroleum Engineer.

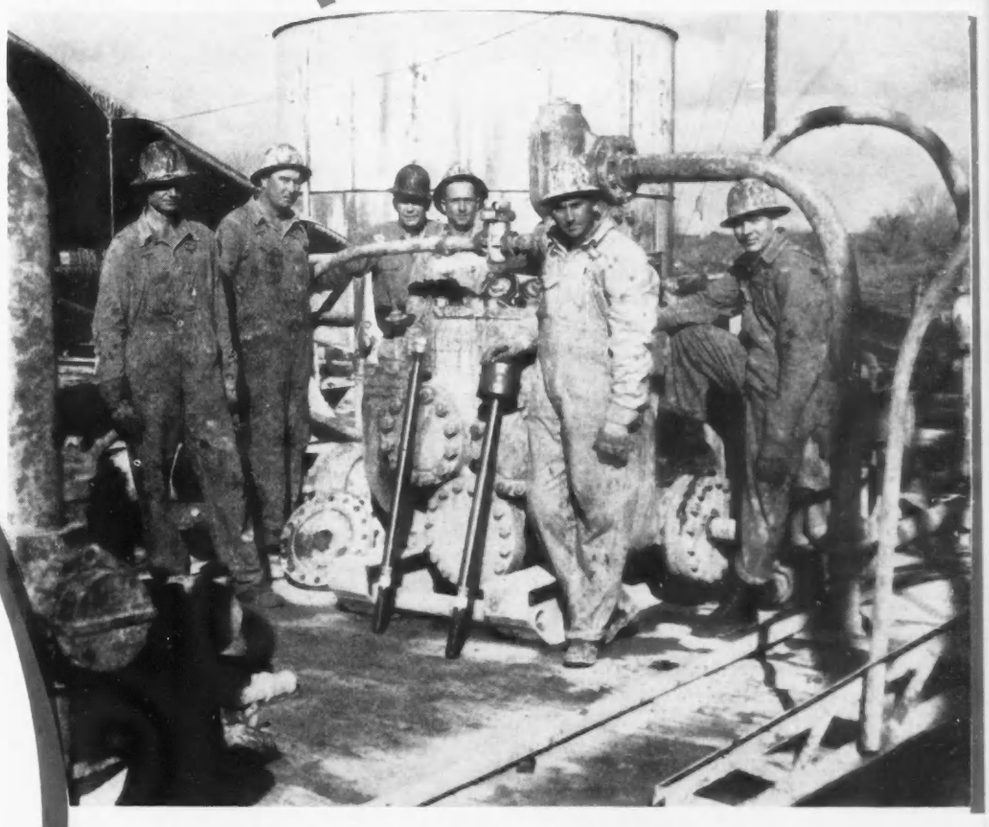
"SOLD THROUGH SUPPLY STORES EVERYWHERE"

PISTON RODS • GLAND PACKING

COMPANY'S MINNIE BROWN #1

13,728 FEET

PUMPS 100% MISSION EQUIPPED.



AT THE RIGHT is a picture of one of the pumps used in the drilling of Union Producing Company's Minnie Brown Number 1. Mission Valves, Mission Pistons, Mission Piston Rods, and Mission Gland Packings were used on these pumps which were compounded to produce 2,300 pounds pressure.

MEMBERS OF MORNING CREW (reading from left to right): M. W. Melvin; W. A. Bruckmiller; F. L. Long; A. L. Herschap; H. L. Bock; R. L. Hart.

MISSION SLUSH PUMP PRODUCTS GET THE CALL WHEN THE GOING IS TOUGH

MISSION Silver Top SLUSH PUMP VALVES
last 100% longer because of the Mission Principle of **"Pull the bushing and save the seat."**

MISSION SLUSH PUMP PISTONS
cut upkeep costs in half, because of the Mission Principle of **"Change the Rubbers and save the Piston."**

MISSION FILE HARD PISTON RODS
are far superior in strength to conventional rods and are the only long-wearing file-hard rods that are positively insured against breakage.

MISSION Self-Sealing GLAND PACKINGS
seal by fluid pressure. Seal is positive and increases as the pressure is raised, preventing cutting of rod by leaking fluid.

MISSION POLICY
"IF A PRODUCT DESIGNED BY MISSION IS NOT PROVEN *Superior* MISSION WILL NOT PRODUCE IT"

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• SLIPS • VALVES • PISTONS • PISTON RODS • SWABS

Methods That Drilled Heaving Shale to 13,728 Feet in Agua Dulce Field

When studied in retrospect, several incidents that occurred become of significance as they warned of impending trouble.

By C. A. SULLINS, Petroleum Engineer, Union Producing Company

and

ORIEN VAN DYKE, Philadelphia Quartz Company

IN PLANNING the drilling of Minnie Brown 1, located in the Agua Dulce field, Nueces County, Texas, Union Producing Company was familiar with the geologic section to be encountered down to about 8000 feet. It was clearly evident that a deep test should be cased with large diameter pipe at about this depth so as to provide a large hole in which to work, and as a protection against blowouts from upper sands. Accordingly, a string of 10-inch O. D. casing was set and cemented at 8007 feet.

A further consideration which entered into the planning of this test was the possibility of encountering heaving shale in the Vicksburg or Jackson formations which lay below 8000 feet, since other wells drilled up-dip in adjacent areas had experienced some shale trouble in these formations. This fact could not be predetermined, so drilling was resumed below the 10-inch casing with no special preparations other than the use of reasonably heavy mud with desirable walling characteristics. Drilling proceeded to 9613 feet, where further progress was impossible because of heaving shale.

In retrospect, certain incidents, recorded in the drilling of the interval 8007-9613 feet, now become important as indicating the impending trouble. These will be summarized briefly and their significance pointed out.

The drilling mud was being controlled carefully and maintained with the following characteristics: weight, 11.8 pounds per gallon; funnel viscosity (1500-500), 21.5 seconds; water loss of 12 c. c. and filter cake 1/8-inch with 100 pounds pressure in 30 minutes.

After making a trip at 8847 feet, returns from bottom showed an amount of soft plastic material, resembling the mud filter cake from the wall of the hole, as if it were sloughing off. Several times later, while drilling, a quantity of this same material was noted in the returns. With bottom at 9052 feet, an electric logging device was run, the electrodes stopping at 8765 feet. A trip was made at 9240 feet and it was necessary to ream from 9135 feet on to bottom. The next trip, at 9442 feet, showed a recurrence of this trouble, necessitating reaming from 9128 to 9347 feet. While pulling up to make a connection at 9593 feet, circulation choked off and the pipe stuck. The pipe was worked loose, circulation was restored and drilling resumed. While coming out of the hole from 9613 feet, the pipe pulled hard (20,000 to 40,000 pounds above the weight of the pipe) and swabbed most of the way to 8857 feet. In going back into the hole, it was necessary to start reaming at 8820 feet, which was continued to 8938 feet and here circulation choked off and the pipe stuck. The pipe was worked back up to 8820 feet with extreme difficulty, where circulation was regained. When it was found impossible to get back to bottom, the pipe was pulled into the casing and operations shut down pending the determination of some program for combating the heaving shale.

Mud Is Changed

It was decided, at this time, to use a mud having a liquid phase of silicate of soda and brine. This type of mud had been used on 16 prior wells to combat heaving shale. It was recognized that the use of such a mud is essentially a preventative measure rather than a cure for trouble which has been encountered already and that it is designed to protect new hole by preventing the formation of cavities caused by the disintegration of the streaks of water-reactive shale found in heaving-shale sections. It was realized that the troublesome part of the hole below 8750 feet would offer a constant threat because of the probability of cavities having been formed due to the contact of the water mud. As will be shown later, the concern over the condition of the hole between 8750 and 9613 feet was not unfounded.

The plans at this stage of the operation called for making up the new mud, washing down to 8750

feet, changing mud, and slowly reaming to bottom so as to remove any accumulation of shale cavings.

The heavy solids of the water mud were salvaged by dilution and settling and used as a base for making up the silicate mud. The salvaged solids plus water were circulated through a hopper mixer and the silicate of soda and salt were added in dry form. Dissolving of the silicate and salt was accomplished by gunning in the mixing pit. The silicate mud was mixed in batches, following a predetermined formula worked out in the laboratory to give the desired physical and chemical characteristics.

The necessary mud (980 barrels) was made up and stored in reserve pits on the surface. The pipe was washed down to 8750 feet, and the water mud in the hole and surface system was displaced with the silicate mud. After equalizing, the new mud had the following characteristics: Weight, 12.8 pounds per gallon; funnel viscosity (1500-500), 19 seconds; 60-volume percent silicate and 34-volume percent saturated salt solution.

In reaming to bottom, it was necessary to ream some sections several times before the hole appeared to be open. In one instance, the drill pipe was stuck for about two hours. It was estimated that about 30 barrels of shale cavings were washed out while reaming to bottom, an operation which was completed in 72 hours after changing mud.

Drill 100 Feet Per Day

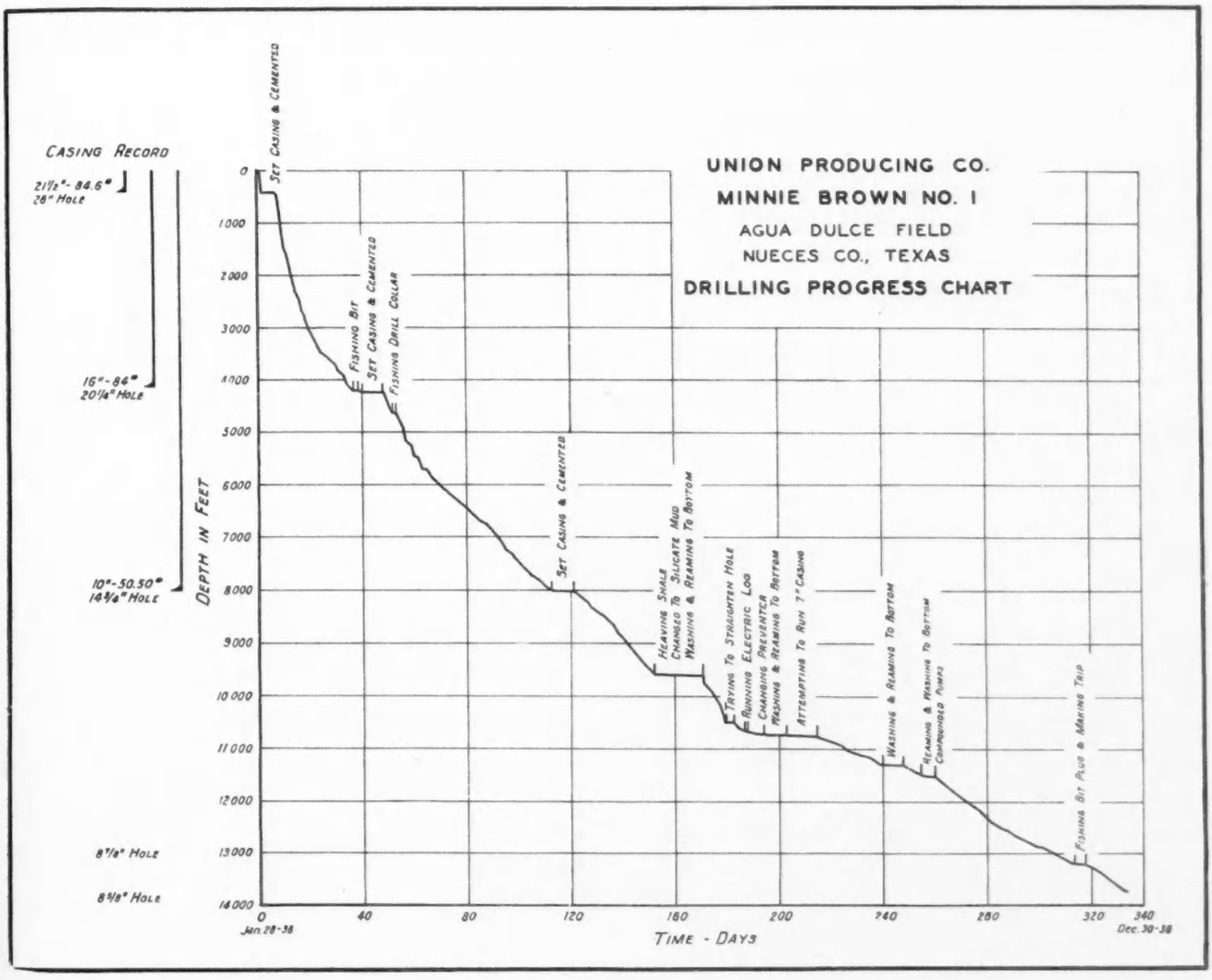
The drilling progress chart (Figure 1) shows that the rate of drilling from 9613 to 10,523 feet was about 100 feet per day with a fishtail bit. At this depth, it was necessary to spend considerable time in reaming and slow drilling in order to straighten the hole which was deviating 5 degrees from vertical.

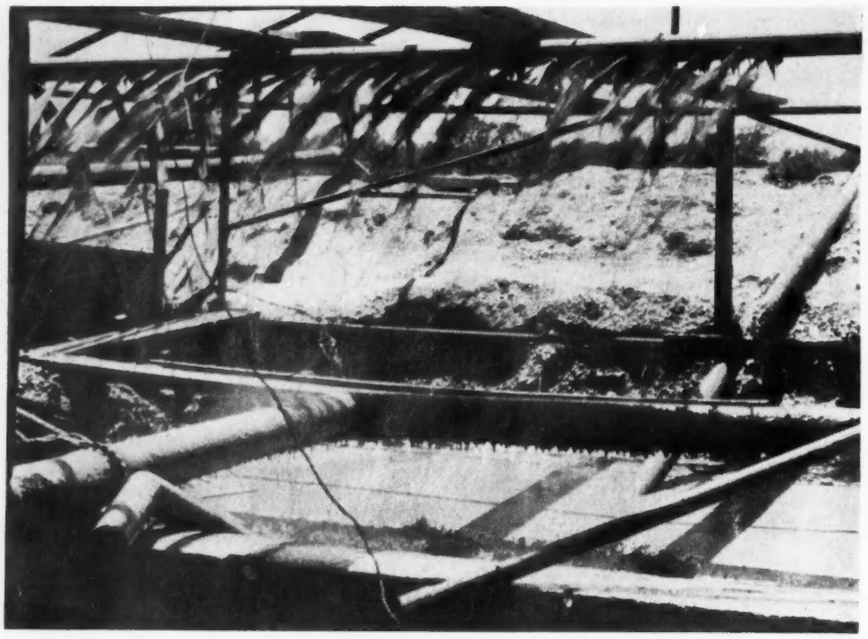
FIGURE 1

At 10,676 feet, an electrical survey was made and the cable went to bottom twice without encountering any obstruction.

The first serious trouble after changing mud was encountered with bottom at 10,768 feet. A round trip was made at this point and the bit was run to bottom without observing any evidence of bridges, although circulation could not be established on bottom. Attempts were made to regain circulation at higher levels, which was not done until the pipe was above 8760 feet. Four days washing and reaming in the hole from this depth to about 9200 feet yielded evidence for the first time that the cavities which had been developed in this interval were still actively enlarging and were not being cleaned out properly. A program of very slow reaming effected the removal of the accumulated shale from these cavities so that it was possible to ream down to bottom without further trouble.

New hole was made to 10,792 feet, at which point two attempts





Because of the rising temperature of the mud stream with depth, the cooling spray shown above was used below 10,000 feet.

were made to set a liner consisting of about 3000 feet of 7-inch flush-joint casing, as a protection string. In both instances it was impossible to run it below 9570 feet.

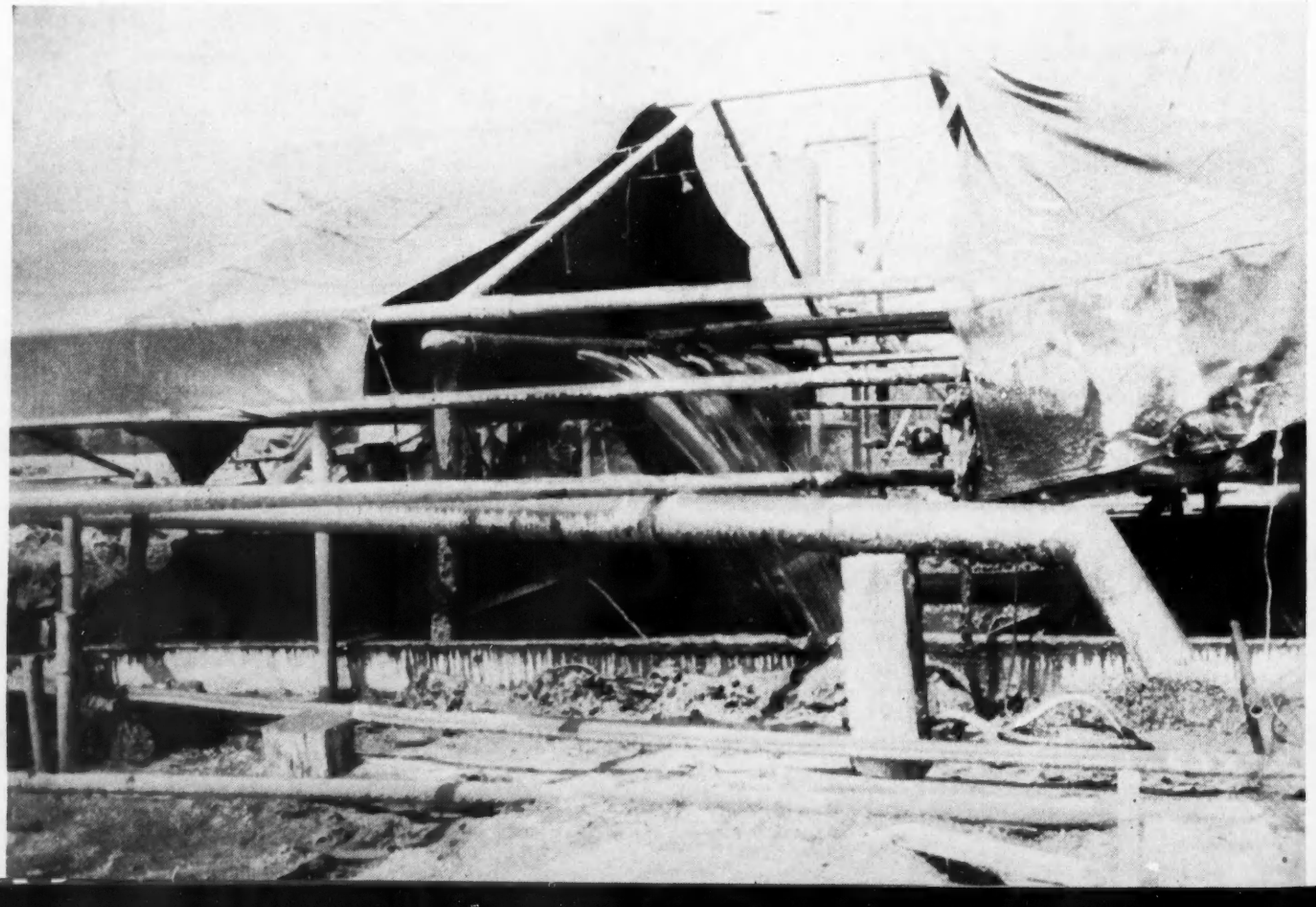
As a result of these experiences, it appeared that at least three major cavities had been formed between 8800 and 9600 feet, during the time of drilling with water mud. Further, the new hole, drilled with silicate mud, showed practically no evidence of wall failure, despite the fact that the cuttings and cores showed a large percentage of highly bentonitic material. It is felt that the recognition of these cavities at this stage of the drilling led to the development of a technique of keeping them cleaned out so as to prevent the recurrence of similar trouble.

The mud cooling spray was installed above the suction pit, as pictured below.

Cavities Require Careful Handling

It seemed that the cavities might be visualized as inverted funnels, the neck of the funnel being the normal sized hole. Cavings tended to accumulate within the cavities, and during drilling they appeared to assume a semi-plastic stability which allowed free rotation and circulation. But, this equilibrium was apparently entirely destroyed by the swabbing and mechanical action of pulling the drill pipe out of the hole. When going back into the hole, it was extremely important to remove these accumulated cavings very slowly so that they would not become congested at the neck of the funnel. Due to their semi-plastic consistency, they would not always offer enough resistance to the bit to show on the weight indicator as a bridge. When a bridge was noticed, it would be washed out and the returns would show a large amount of shale. When it was not noticed and the pipe was run through the bridge, circulation would cause the movement of too large a quantity of shale to pass the neck of the funnel and result in a bridging between the drill pipe and the wall. Increased pump pressure tended to pack the shale tighter. The remedy was to break the bridge by working the pipe without pump pressure, pulling the bit above the point of congestion, and then washing out the cavity slowly.

The cavities caused two subsequent incidents of major trouble,



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The mud ditch and covered slush pit at Minnie Brown 1.

at 11,317 and 11,510 feet, respectively. In each instance, the washing previously outlined relieved the situation.

One other practice, inaugurated at 12,012 feet, seemed greatly to expedite the making of round trips. When coming out of the hole, 600 to 900 feet of pipe was removed and the hole then circulated for 15 to 20 minutes. Another similar amount of pipe was pulled, and the hole again circulated. In this manner, the pipe was pulled out of the open hole by stages. This seemed to relieve the mechanical disturbance caused by swabbing without resorting to continuous circulation, and tended to keep the hole swept clean of accumulated shale.

Drilling and Mud Data Recorded at Two-Hour Intervals

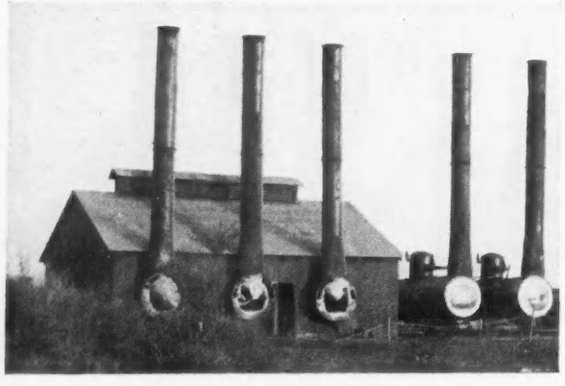
The recording of drilling and mud data at approximately two-hour intervals during the entire time this well was drilling in the heaving shale section proved invaluable. The data recorded at the intervals mentioned were: weight, funnel viscosity, and temperature of the mud at the flow pipe; volume of mud in the suction pit; type of returns over the shaker screen; circulating pump speed and pressure; rotary speed, torque, and weight on bit; driller's log of formation and depth. One or more laboratory checks were made each day on the mud from the flow pipe, which included determination of Stormer viscosity and gel strength, 100-pound filter test, recording rate of filtration-fluid loss and cake thickness in 30 minutes, and analysis of the liquid phase of the mud for silicate and salt content. On trips, notes were made of the depths where the pipe pulled tight and, in going back of those where the pipe took weight and of the sections that were reamed.

These data aided in giving the drillers and the supervising personnel a clear picture of the condition of the hole at all times. It was interesting how the data showed warning of trouble before its actual occurrence, although at the time it was not always possible to recognize these warnings and pursue a practice that might have prevented the trouble.

The mechanical practice during drilling involved nothing new or unique. However, in applying what might be considered good standard practice in drilling and handling of the pipe, much more than the normal amount of caution was exercised in attending to details. At all times operations were planned carefully in advance but changed as the situation demanded.

Control of Silicate Mud Is Different

As may be seen on the accompanying flow diagram (Figure 2), the mud coming from the hole passed through a 40-mesh shaker screen to remove the cuttings and flowed on to the suction pit. As the



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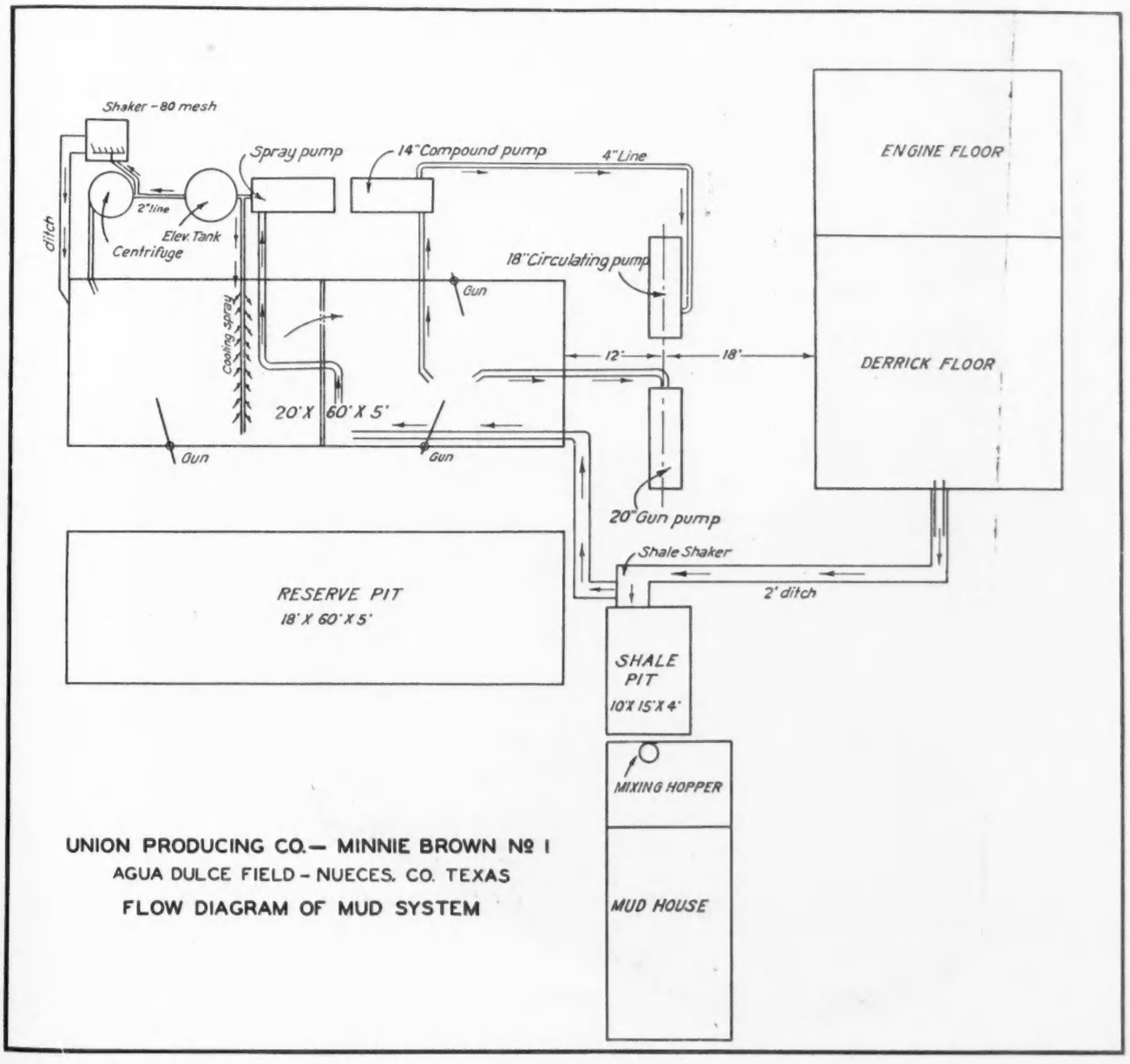
mud entered the pit, it was picked up by an auxiliary pump and a portion sprayed to accomplish atmospheric cooling. The remainder of the mud from this pump was passed through an 80-mesh shaker screen to remove the fine shale solids. At another point in the suction pit the mud was picked up and gunned back into the pit by three guns having submerged nozzles. Constant circulation through the guns broke out any air or gas in the mud and kept the system equalized. The flow of the mud in the suction pit was designed so that the mud picked up by the compound pump feeding the hole, would have been through the above cycle of reconditioning.

The control of a silicate mud is different in some respects from the control of a water mud. It differs mainly in that the cuttings from the formation being drilled are not disintegrated or dispersed by the silicate liquid phase. The cuttings from soft shale sections have the appearance of small shavings, carrying definite bit marks; hard shale cuttings appear as small chips as in any mud. By taking advantage of this lack of mud-making ability, the shale cuttings may be removed mechanically and the mud circulated continuously for drilling with very little dilution to maintain a uniform viscosity. The amount of dilution necessary usually equals the extra volume needed to fill the new hole drilled.

Part of the cuttings reach the surface with a particle size that allows them to pass through a 40-mesh shaker screen. The finer shale solids gradually accumulated in the mud and resulted in an increase in viscosity that was undesirable. The size of these fine shale solids was reduced greatly each time the mud made a cycle through the pumps and down the hole, due to the grinding action of the high velocity at high pressures. Eventually the shale was ground to a particle size approaching colloidal dimensions, resulting in an increase in gel strength that also was undesirable. An auxiliary 80-mesh shaker screen was used to remove the fine shale solids from the mud. This simplified the control of the viscosity and gel strength and effected a decided economy in mud materials.

When necessary, water was added to reduce the viscosity, as

FIGURE 2



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AGUA DULCE FIELD - NUECES. CO. TEXAS
FLOW DIAGRAM OF MUD SYSTEM

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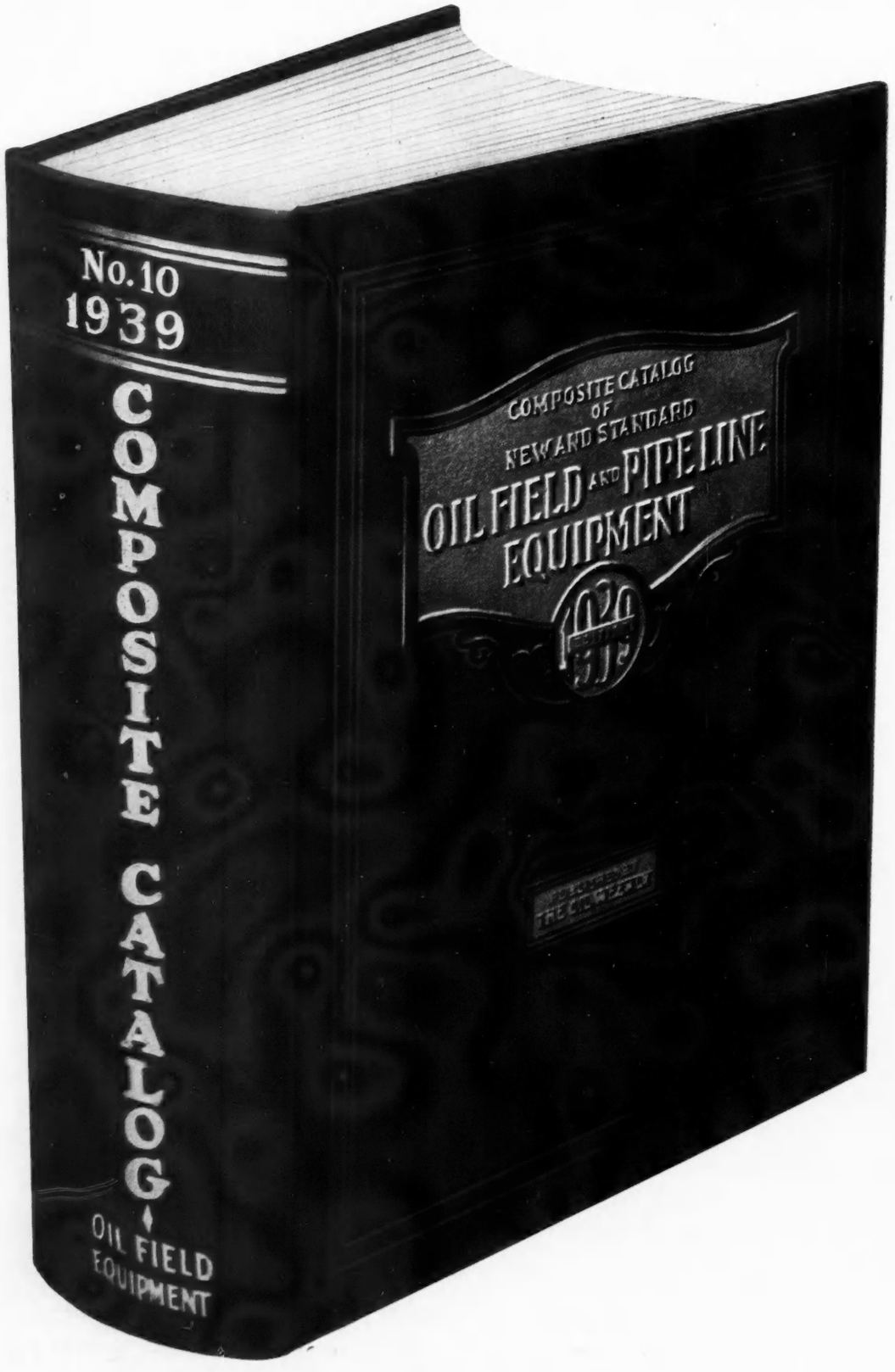

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this can be controlled only by dilution of the solids content.

The silicate and salt concentration was maintained by adding the powdered silicate and salt through the mixing hopper to the suction pit, solution taking place as the mud circulated.

Samples of the shale being drilled were observed constantly, and the silicate content adjusted as needed to prevent disintegration and swelling of the most reactive shale observed.

The maintenance of the desired weight of the mud offered no problem. A factor in this was that the liquid phase of the mud weighed about 11.4 pounds per gallon, so that only a small amount of suspended solids was necessary. Commercial weighting material was added as needed to increase the weight.

While drilling above 10,000 feet, it became evident that the mud would have to be cooled as its temperature at the flow pipe was 146° F. and was increasing gradually with depth. A cooling spray was used during the balance of the operation so as to keep the flow pipe temperature below 138° F. A survey at 10,676 feet showed the bottom-hole mud temperature to be 192° F.

During the time of drilling with silicate mud, no major change was made in either its chemical or physical properties. The mud was maintained at approximately 13 pounds per gallon. The viscosity and gel strength increased gradually during the 5½ months of drilling. The silicate and salt concentration varied at times but never to an extent which would allow the disintegration of the shale being drilled. When the final depth of 13,728 feet was reached, the mud had the following characteristics:

Weight—13.2 pounds per gallon
Funnel viscosity (1500-500)—31 seconds
Flow pipe temperature—138° F.
Stormer viscosity—57 centipoises
Gel strength—74 grams
Analysis of liquid phase, 59.8 volume percent silicate, 27.4 volume percent saturated salt solution
Filtration characteristics, 22.5 c.c. of filtrate and a cake thickness of 5/32 of an inch, in 30 minutes at 100 pounds pressure.

Much Coring Near Bottom

Wire line coring was started at 10,676 feet and the remainder of the hole below this depth was drilled with a wire line core bit. Seventy-seven cores were taken below 10,676 feet, with an average recovery of 65 percent. All the recovered cores were shale that exhibited the same general lithologic characteristics of interbedded soft and hard shale. The soft shale would disintegrate rapidly in water, whereas, in most cases, the harder shale would not. Quite commonly, the hard shale was brittle and appeared to have a definite pattern of fracture planes.

On numerous occasions it was necessary for the drill pipe to be in the hole without circulation. Over 190 trips with the wire line overshot were made, each trip requiring one hour or more without circulation. In one case of mechanical failure at 12,900 feet, circulation was off 8 hours. When such an emergency arose, the pipe was pulled several feet off bottom and slow rotation maintained. At no time during such a shutdown did the pipe get tight or was it difficult to reestablish circulation.

The length of time between trips was extended gradually from 2 or 3 days while drilling around 10,000 feet, to a maximum of 17 days at the conclusion of drilling. The condition of the hole seemed to improve by extending the interval between trips.

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Investment Bonds and Municipal Obligations (all carried at par or less)		2,283,088.00
Stock in Federal Reserve Bank		64,500.00
Loans and Discounts		3,835,310.81
Interest Earned but not Collected		85,132.63
Building Account		983,594.51
Other Real Estate Owned		1.00
Total		$39,693,114.91

LIABILITIES

Capitol Stock		$ 1,200,000.00
Surplus		950,000.00
Undivided Profits—Net		331,536.67
Reserved for Taxes, Interest, etc.		150,321.87
Interest and Discount Collected but not Earned		16,641.03
Reserved for Undeclared Dividends		48,000.00
Deposits: Commercial	$19,952,171.71	
Correspondent Banks	5,055,138.97	
Time	9,070,759.84	
Public Funds	2,150,810.22	
Other Deposits, Certified and Cashier's Checks, etc.	767,734.60	36,996,615.34
Total		$39,693,114.91

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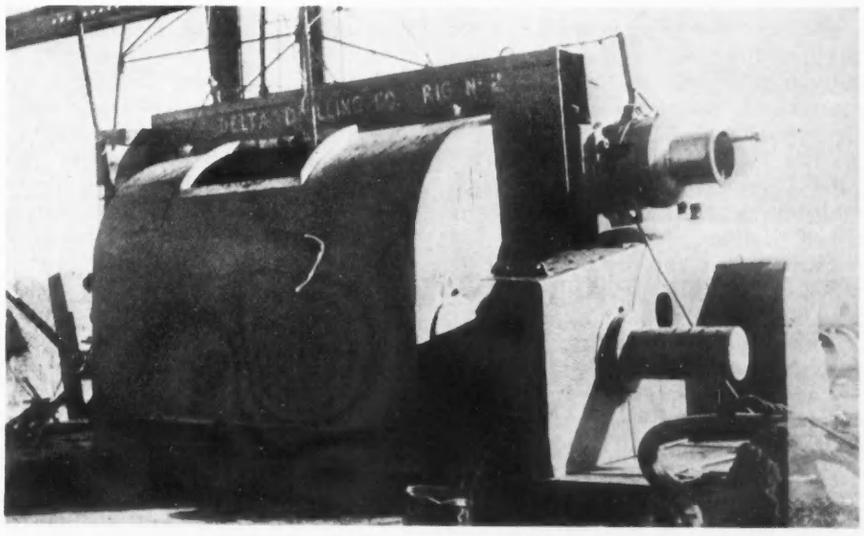
Shifting of Rigs Cuts Drilling Costs

By CLAUDE JOHNSTON, General Superintendent, Delta Drilling Company

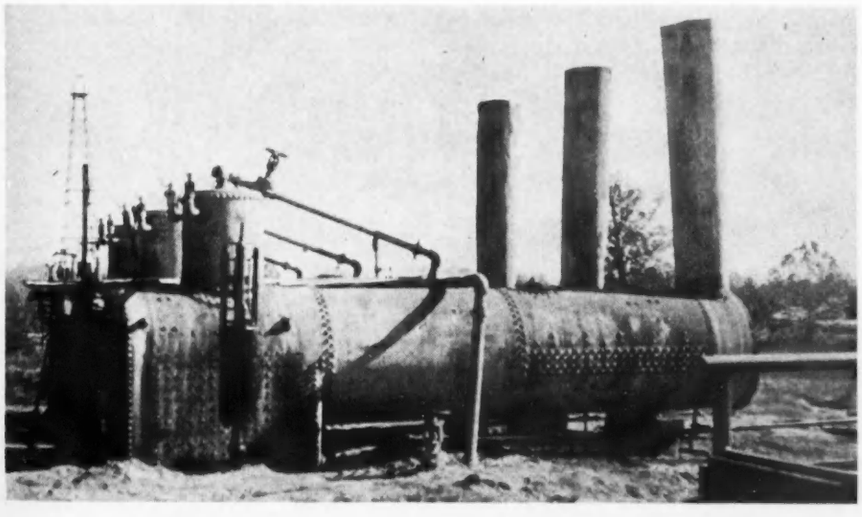
AN unusual sight in drilling operations is the regularly scheduled shut-down of Delta Drilling Company's units in the Schuler field when the well log shows only some five to six thousand feet of the contract depth. At this time the entire rig, crown block, travelling block, drawworks and boilers are stripped for transportation and hauled away, new (to the well) equipment being brought in to replace the machinery being taken away.

Not until a check-up is made and the fact that a light rig is being taken out and heavier equipment, capable of reaching the contract depth of over 7700 feet, being set up does the reason for the shift appear.

With locations ahead, derricks are erected on the next locations to be drilled, and the initial hole and up to 6000 feet of hole are drilled with a light rig, this equipment being capable of maintaining maximum drilling speed up to this point. Then, as the heavier rigs used for completing the wells are released, the nearest one is shifted to the operation where the light rig is nearing its economical drilling limit, and there set up.



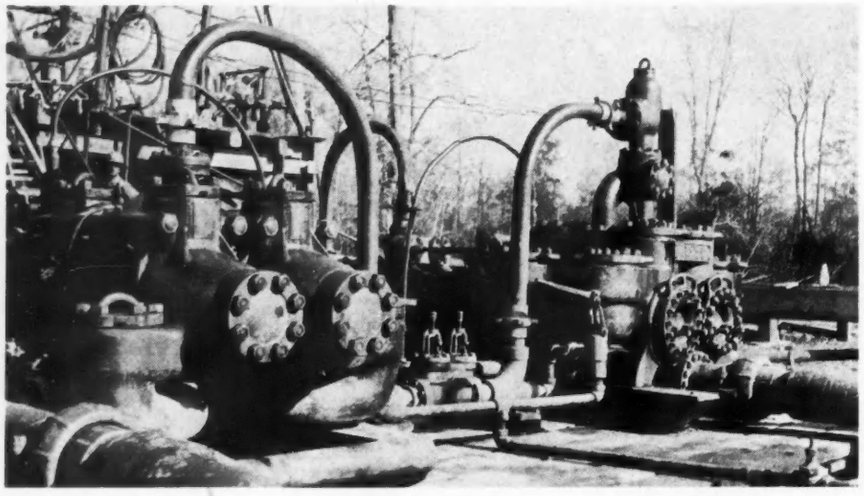
Drawworks of light rig being set up for first stage drilling (from surface to 6000 feet) at Schuler.



Boiler battery for light rig. Dismantling of these "pots" has begun preparatory to quick shift to a new location, and heavier units will be moved in to drill from 6000 feet to Schuler's producing depth of 7700 feet.

By having locations and derricks ahead, it is possible for the two light rigs in the field to keep ahead of the heavier completing units, and thus give, in actual drilling results, the same number of completions as would be secured were all the derricks equipped with the heavy equipment.

Utilizing the light rigs puts on the drilling personnel the task of



Slush-pump hook-up for the deep-hole rig, showing quick action unions on all lines, smooth bends and unitized connections for pump lines and heavy type of equipment used.

handling the lighter equipment for the first four weeks of drilling, and thus lightens their duties by that amount. It enables Delta to make that much hole with a daily depreciation on a rig costing around $30,000, instead of being forced to maintain a unit costing nearly four times that amount. Fuel costs are less, firing the smaller boilers powering the light rig; travelling block loads are lightened, and cable wear reduced by that amount; lighter and less expensive slush pumps are used throughout the handling of the exceedingly abrasive shale zone cuttings; and there is a marked savings in lubricant costs.

To offset all the enumerated gains through using the light rig for drilling to its capacity there is only the lost time sustained by shutting down and replacing initial units with the heavier type. This time averages from 24 to 30 hours, depending on the location, facilities for handling units in and out, and weather conditions at the time of the shift.

Since Delta schedules and rigidly demands a shut-down of the rig every ten days for complete and thorough inspection of all machinery, washing out of boilers, and check up of all lines, drill stem and the like, and as this inspection time is combined with that sacrificed for making the change-over to heavier equipment, the actual net time loss of making the change is shortened by the eight hours normally used for this inspection routine. Thus the change costs the company only from 16 to 22 hours actual drilling or lost time, the only charge against the shift is that amount of labor or personnel expense.

Maintenance costs on a light rig amount to around $1000 per hole, over an extended period of drilling. Against this, were the entire 7700 feet drilled with a heavy rig, there would be an average maintenance charge of $3600. Apportioning this amount over the 45 days required for drilling and completing a Schuler well on the basis of actual days each rig is used, the cost figures on maintenance show—

Light rig (6000 feet)	$1,000
Heavy rig (6000-bottom)	920*
Total rig maintenance	$1,920

*Figured on 12 days at $80.00, averaged from total maintenance cost on full-time drilling of well with heavy rig.

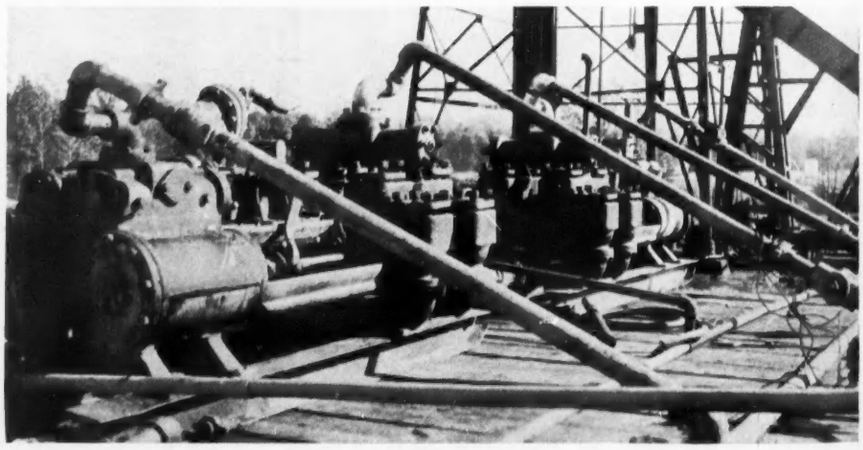
giving a neat saving of $1680 per well drilled on maintenance costs alone.

When to this reduced outlay for maintenance is added the gain in investment charges on a rig outlay of $30,000 against $100,000, it becomes evident that Delta effects a highly desirable cut in drilling costs through the plan of carrying hole with two sets of equipment.

On a basis of total rig investment for maintaining a drilling program such as Delta is following in the Schuler field, the use of the light rigs as two of the seven complete units functioning there, reduces the capital outlay and consequent interest charges from a figure well over $700,000 to around $550,000—a sum which might be reduced still further were the extent of the field as at present defined or forecast sufficient to justify the acquisition of additional drilling units.

Contributing largely to the success of the rig shift in mid-drilling is the carefully worked out plan of standardization and the adherence to consideration of an entire drilling rig as a unit. This standardization makes all set-ups of any rig uniform, eliminating lost motion, time expenditure for fitting up component parts, and delays through waiting for the proper sequence of replacements in the transportation of incoming heavy and outgoing light rigs.

Only as a concession to the plan of keeping a complete unit intact is the crown block change made with the remainder of the rig exchange. Were a heavy block installed at the outset of drilling, the light rig unit would not be complete, or would be out of balance with an overweight crown set-up, when the ultimate change is made from the Schuler field, with its planned procedure, to another field or perhaps wildcat contract, where the opportunity for exchange would not exist.



Slush-pump hook-up for first stage drilling in Schuler field, showing standardized piping and manifold to permit quick set-up or knock-down at time of move.

WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Canadian Fields

Expert advice to assure efficient operation of Turner Valley . . . Commission to study fairness of pipe line rates . . . Estimates on life of field vary.

N. E. Tanner, Alberta minister of lands and mines, declared that the Canadian province will obtain the best expert advice available to make certain that the Turner Valley field is operated efficiently and produces the greatest possible ultimate recovery of crude oil.

The provincial government official testified before a royal commission investigating Alberta's oil and natural gas industry, and was called to the stand following testimony that the field should have a life of 31 years at a withdrawal rate of 15,000 barrels a day but that it could be ruined in a much shorter time by wasteful and inefficient operation.

"It is the policy of the provincial government to obtain the best expert advice possible so that the Turner Valley field may be produced by the best methods of operation known," Tanner told the commission. "It is the intention of the government to continue this policy. If necessary, we will get more expert advice. The government will see to it that the greatest ultimate recovery of oil is obtained and it will conserve and protect our natural resources."

Answering J. J. Frawley, K. C., commission counsel, Tanner added that the best engineering practice will be followed.

Pipe Line Tariff

Testimony thus far given before the commission, which has already conducted more than a month of hearings, has related to estimates on the probable life of Canada's major oil field and will serve as a basis to determine whether a charge of 15 cents a barrel for transporting crude from the field to Calgary through pipe lines of Royalite Oil Company, Ltd., is equitable. The distance is approximately 35 miles.

Justice A. A. McGillivray, commission chairman, announced that a report on the pipe line phase of the inquiry would be made immediately following completion of testimony on this subject. The inquiry would be extended into refining and marketing practices later, he indicated.

Should additional testimony be offered that would have a bearing on the commission's recommendation regarding a fair pipe line charge after the recommendation had been made mandatory by the public utilities commission, an

Six estimates regarding Turner Valley reserves and probable life of the field have been given to the commission. They are:

S. F. Shaw, San Antonio, Texas, who testified for Anglo-Canadian Oil Company, Ltd., 3000 to 4000 proven acres, 8000 to 10,000 acres probably productive, 120,000,000 to 200,000,000 barrels of oil, 22 to 36 years of life.

Deussen's Estimate

Alexander Duessen, consulting geologist of Houston, Texas, who testified for Imperial Oil Company, Ltd., 3623 proven acres, 9249 probable oil-bearing acres; 122,388,027 barrels of oil, 22.3 years of life.

Dr. B. B. Boatright, Houston petroleum engineer who testified for the commission counsel, 10,000 proven acres, 5000 probable oil-bearing acres; 171,000,000 to 256,000,000 barrels of oil, 31 to 46 years of life.

Dr. T. A. Link, Calgary, geologist for Imperial Oil Company, Ltd., 3623 proven acres, 18,000,000 barrels reserve, 3 years of life. Dr. Link did not make an estimate of the unproven and probable oil-bearing acres.

Stanley J. Davies, Calgary, geologist and petroleum engineer, 3523 acres proven, 14,000 probable oil-bearing acres, 105,000,000 barrels of oil, 20 years of life.

Stanley Gill, consulting engineer of Houston, Texas, who testified for Anglo-Canadian Oil Company, Ltd., 5500 acres proven; 13,500 probable oil-bearing acres, 200,000,000 barrels of oil, 22 to 36 years of life.

Kenneth Morrison, chartered accountant for the commission, last week testified that the Royalite company made a gain of approximately 11,000 barrels of oil in the last 3 months of 1938 and approximately 82,000 barrels in the 5 years and 9 months preceding. The gain was realized through a charge made to companies selling crude in the amount of 3 percent on naphtha and 2 percent on crude oil carried through the Turner Valley-Calgary pipe line in deductions to cover evaporation and other pipe line losses.

Although a downward revision of loss deductions to 2 percent on naphtha and 1 percent on crude was made last amendment to the new rate could be made, Justice McGillivray said.

September, actual losses did not come near that amount, Morrison said. The witness added that in the 5 years ended December 31, 1937, the Royalite company obtained a total revenue in pipe line operations of $1,298,264. Operating expenditures during the period were $604,689, leaving $693,575 excess in revenue over expenditures. In the first 9 months of 1938, revenues over expenditures totaled $295,000, he added.

Davies, recalled to the stand late in the week, declared that 30 wells would have to be drilled in Turner Valley every year to maintain production With 25 percent gross royalties to be met by most companies and the average cost of drilling a well in Turner Valley set at $165,000, it would be difficult to raise capital to continue such a drilling program, he added.

Samples of Turner Valley crude sent to England

Samples of Turner Valley crude oil were shipped to England last week for analysis to ascertain if the product is suitable for aeroplane gasoline. Five-gallon samples were taken from outpost wells recently drilled, but not completed, in the major Alberta field and additional samples from the regular pipe line run.

Alberta operators believe Turner Valley crude will meet all requirements of British government engineers. Outcome of the tests may speed development of the field with the aid of British capital, and may increase British interest in construction of a crude oil pipe line from Calgary to either the west coast or to Fort William, at the head of the Great Lakes. A pipe line is considered by some operators to be the most urgent need for expansion of markets and encouragement of additional development.

Turner Valley gas order is extended

The Alberta Petroleum & Natural Gas Board last week extended its order of last November 30 permitting natural gas wells in Turner Valley to produce an aggregate of 108,000,000 cubic feet of gas daily. No expiration date on the extension was given.

The allowable production had been raised from 40,000,000 cubic feet daily to 108,000,000 cubic feet last year at which time it was expected that some

repressuring plan might be adopted that would make possible continued operation of naphtha wells and naphtha plants in Turner Valley. Until last year, gas wells on the east flank were running wide open with the gas burned in the air after the naphtha had been extracted.

In its November order, the board said:

"It is the intention of the board immediately thereafter (January 15, 1939) to further restrict the production of gas from all wells to which this order relates to such amount as is, for the time, used for lighting, heating and the generation of power, together with any further amount which is returned to the earth in such manner as may be approved by the board."

Canadians seek means of getting market in Orient

A proposal to interest the governments of British Columbia and Alberta in establishing a tank storage farm at Vancouver capable of storing approximately 500,000 barrels of Alberta crude oil for export shipment was advanced last week by Herbert Greenfield, president of the Alberta Petroleum Association. Financial assistance for the project may be sought of the provincial governments.

With a play for the foreign oil market in mind, the association is seeking a freight rate on crude to Vancouver equivalent to that charged for hauling wheat.

"Full benefit of the Pacific Coast export trade is expected to be achieved after the Japanese-Sino conflict," Greenfield said. "It is hoped Alberta will receive a portion of the crude oil business going to the Orient from the United States, which amounted to 50,000,000 barrels in 1937."

Canada imports less crude; more gasoline

A sharp upward turn in gasoline shipments marked the 1938 export of petroleum and its products to Canada, it was disclosed January 19 by the Department of Commerce in a review of United States-Canadian trade.

The department's findings were based on a review of trade for the first ten months of last year which showed that while exports of crude oil to Canada dropped to 21,979,000 barrels valued at $31,851,000 from 24,739,000 barrels valued at $34,539,000 in the same period in 1937, shipments of gasoline increased from 674,000 barrels valued at $1,936,000 to 2,176,000 barrels valued at $5,416,000.

Other products to show increases were gas oil and distillate fuel oil, from 507,000 barrels valued at $782,000 to 508,000 barrels valued at $876,000; residual fuel oil, from 557,000 barrels valued at $520,000 to 877,000 barrels valued at $740,000, and red and pale lubricating oils, from 268,000 barrels valued at $801,000 to 55,000 tons valued at $1,983,000.

Decreases were shown in exports of natural gasoline, from 761,000 barrels valued at $1,822,000 to 689,000 barrels valued at $1,389,000; naphtha, solvents, etc., from 79,000 barrels valued at $274,000 to 63,000 barrels valued at $251,000; lubricating greases from 4,992,000 pounds valued at $328,000 to 4,799,000 pounds valued at $232,000; and petroleum coke from 102,000 tons valued at $801,000 to 55,000 tons valued at $496,000.

The increased exports of gasoline and other products was in marked contrast with the decidedly downward trend which marked the 1938 trade, the department commented.

Turkey will start deep drilling this spring

The Turkish government, after drilling 17 wells with slight showings of oil but not enough for commercial use, plans to begin deep drilling operations this spring, according to S. H. Russell, the Turkish government's drilling superintendent and former Texan who recently visited friends in Longview.

Russell, who was born in Philadelphia but was brought up in Texas and Mexico, where he was in the oil business 14 years, is now vacationing in the United States after an absence of five years, during which he has been employed by the Turkish government to assist in wildcatting for oil. He arrived for his vacation on December 15, and must be back on the job in Turkey not later than March 10.

Interviewed in Longview, Russell stated that no private companies are allowed to drill for oil in Turkey. Instead, the government makes an annual appropriation of $375,000 to support seismograph crews and carry on drilling operations.

Two Rotaries Purchased

"Two large rotary rigs have just recently been purchased by the government," Russell said, "and when drilling is resumed in March we will go below the 6000-foot depth, which is as deep as we have gone in any of our tests."

The deep wells will be drilled near the Tigris River, Russell said, 160 miles north of the Irak pool.

In commenting on the recent death of Mustapha Kemal Ataturk, late president of Turkey, Russell said: "One of the saddest things I've ever had to do in my life was to attend his funeral. He had done great things for Turkey. Fortunately, he was succeeded by Ismet Inonu, his former prime minister. There was some fear at first that perhaps another man would get in power, but when the people heard that Inonu was Ataturk's successor, they were relieved."

Four biplanes bought to patrol Iraq pipe line

Four new twin-engined biplanes have been sent from Britain to Iraq to take over patrol and field service duties along the 1200 miles of the trans-Syrian double pipe line which links the oil fields of the Iraq Petroleum Company at Kirkuk with the seaports of Tripoli and Haifa, Leicester Cotton of London reports.

This pipe line, which carries 4,000,000 tons of crude oil a year, passes entirely through desert, and there are engineers' stations at intervals of about 100 miles. The work of the patrol is to convey food and mail to the staff at the stations besides keeping a watch on the pipe line for leakages.

Netherland West Indies exerts trade influence

Indication that the influence exerted by the Netherland West Indies on petroleum affairs in the United States and abroad will be extended in the next few years is expressed by A. H. Redfield, of the Federal Bureal of Mines, in a report on petroleum trade in the Caribbean Sea.

"The rise of the Netherland West Indies in a period of 21 years from a commercial insignificance to a leading role in the international trade in petroleum is one of the most dramatic events of modern economic history," Redfield said in his report. "The geographic position of Curacao and Aruba, the spectacular growth of the Venezuelan petroleum industry, the lack of deep-water harbors adjacent to the Maracaibo oil fields and concentrated corporate control, all played their part in this rapid evolution.

"To the United States, the Netherland West Indies are significant as a major source of petroleum imports, a competitor in the international petroleum trade, and an influence in reversing the traditional free-trade policy toward imports of mineral oils."

Large actual production in Venezuela and a large potential production necessitated a suitable refining and terminal point. Royal Dutch Shell became active in exploring and working out the possibilities for the Netherland West Indies some 18 years ago, and later interests that eventually passed to Standard Oil Company of New Jersey entered the picture. The two interests are now the principal operators on the islands, having two of the world's largest refineries with a combined daily capacity well above 500,000 barrels daily. Refining capacity is being expanded.

Advantage Over Gulf Coast

The islands are described as having a distinct advantage over Mexico and the Texas Gulf in the Atlantic seaboard or European market because of a shorter shipping distance and low labor costs. They are 12 percent nearer New York than Tampico, 5 percent nearer than Port Arthur, Texas, and about 5 percent nearer than Galveston, Texas. Similarly, they are 18 percent nearer London than Tampico and 15 percent nearer than either Port Arthur or Galveston.

Discussing the possibility of a change in the island's advantageous position by growth of refining in Venezuela and dredging of the bar separating Lake Maracaibo from the Caribbean at a cost of $18,000,000, with completion expected in 1941, the report said:

"The two major companies of world-wide scope which own the refineries in the islands are in a position to meet nationalistic policies of Venezuela by shifts in the international flow of crude petroleum to protect their great investments in refining, shipping and bunkering facilities. Such a shift has already occurred in response to the change in the policy of the United States with regard to petroleum imports, embodied in the revenue act of 1932."

MEN IN THE INDUSTRY'S NEWS

CARL A. YOUNG, division of production secretary of the American Petroleum Institute, was elected president of the Dallas Petroleum Club at the annual directors' meeting January 13. He succeeds R. S. McFarland, vice president of Seaboard Oil Corporation. J. B. Cowden, Clark-Cowden Drilling Corporation, was chosen vice president, and Frank I. Brinegar, Continental Supply Company, was re-elected secretary-treasurer. John R. Suman, Humble Oil & Refining Company, Houston, was a guest speaker at the meeting.

R. L. WHEELOCK, Corsicana producer, was re-elected president of the Texas Petroleum Council at the annual meeting held January 13 in Dallas.

DON WEITHAS has joined the scouting staff of Phillips Petroleum Company and will work out of the Shawnee, Oklahoma, office. He has been with both Stanolind Pipe Line Company and Stanolind Oil & Gas Company in Kansas.

FRED S. WRIGHT, JR., has been added to Magnolia Petroleum Company's engineering staff. He will be assigned to the Chase district, Kansas, with headquarters at Ellinwood. He is a graduate of the University of California.

W. D. RICHARDSON, vice president and director of Cosden Petroleum Corporation, Fort Worth, has resigned to operate independently. He may later become associated with a group that is contemplating the erection of a refinery to serve several isolated oil pools in West Texas.

LELAND K. WHITTIER, director of M. H. Whittier Company, Los Angeles, and Herman Phleger, partner in the Los Angeles law firm of Brobeck, Phleger & Harrison, last week were named to the board of directors of Union Oil Company.

EDDIE SELF, independent operator of Centralia, Illinois, was in Evansville, Indiana, last week.

AL WINZELER, member of Stanolind Oil & Gas Company's Kansas geological staff, has been transferred to Albany, Missouri. He is working with a core-drilling crew testing structures in Worth County, just south of the Iowa line.

DR. J. C. HAFF, member of the geological faculty of the University of Wichita, addressed the Kansas Geological Society last week on "Multiple Dikes of Cape Meddick, Maine."

H. E. MONTGOMERY, S. P. Hutchinson and Milton R. Levy last week organized Reliance Petroleum Company as an Illinois corporation to engage in exploration and drilling activity. Headquarters have been established in the Ridgely Building, Springfield.

W. R. ABBOTT, president of Aetna Refining Company, Louisville, Kentucky, was named president of Birk City Oil Company at the company's annual meeting held in Owensboro last week. The firm is the successor to Hoosier Drilling Company, which brought in the Birk City pool discovery well in Henderson County, Kentucky, last April. Other officers named are Charles J. Scholz, vice president; J. L. Kennard, secretary; Everett Combs, treasurer, and Benn Bartlett, E. L. Newton and Dr. Harold Lynch, directors.

CHARLES B. GODDARD, Ardmore oil producer, has been appointed a member of the Oklahoma Game and Fish Commission. Goddard has long been active in game preservation in Oklahoma and maintains a private game preserve near his home.

JOHN D. TODD, of the geological firm of Roper and Todd, addressed the Houston Geological Society last week on the

Blank & Stoller

JOHN D. TODD

Sparta-Wilcox trend. Todd and Roper have made a study of the trend for the past several years. They have written several articles concerning this trend and shortly will review recent developments and also the new Eola strike in Avoyelles Parish, Louisiana, in The Oil Weekly.

O. S. CHAPIN, Calgary, is president of North Continental Oil & Gas Corporation, backed by eastern United States capital and which will undertake a development campaign in Alberta.

DR. HYRUM SCHNEIDER, former instructor in geology and mineralogy at the Colorado School of Mines, last week was appointed to the chair of professor of geology by University of Utah regents. He succeeds the Late Dr. Frederick J. Pack. A member of the Geological Society of America and of the Mineralogy Society of America, he entered the field of geology as an assistant with the Wisconsin geologic survey in 1910.

DEAN METTS, Humble Oil & Refining Company, was elected president of the South Louisiana Geological Society at the first regular meeting of the year, held at the Majestic Hotel in Lake Charles. Other officers include H. E. McGlasson, Stanolind Oil & Gas Company, vice president; G. O. Grigsby, Stanolind Oil & Gas Company, secretary, and Baker Hoskins, Shell Petroleum Corporation, treasurer.

DR. H. A. BUEHLER, Missouri state geologist, declared there is a definite likelihood of oil "traps" in northwest Missouri when addressing a group of state newspaper men last week. He declared that all available information on the Forest City Basin had been given by his office to about 250 geologists. The Wilcox sand, or St. Peter limestone, should be found about 4000 feet below the surface in the deepest part of the basin, he added.

NELSON SPENCER, president of Home Oil Company, Ltd., left Alberta last week for the company's home office at Vancouver, British Columbia, following completion of that company's wildcat in the Turner Valley field. He declared that directors of the company would meet shortly to plan a development campaign for the new area.

THERON WASSON, chief geologist for Pure Oil Company, discussed exploration and development of the Illinois basin area last week at a luncheon meeting of the Investment Analysts' Club of Chicago.

D. C. RICHARDSON, independent operator of Shreveport, Louisiana, stopped in Evansville last week while looking over the Indiana-Kentucky-Illinois area.

HARRY SCHWARZ, of the Mocarz Oil Company, Dallas, Texas, now stopping in Evansville, was in Indianapolis last week.

C. W. HICKS, independent operator of Tulsa, recently drilling in East Texas, plans to develop a block of leases in Butler County, Kentucky.

COLONEL T. H. BARTON, president of Lion Oil Refining Company, will address the Pine Bluff Chamber of Commerce, Pine Bluff, Arkansas, January 23 during the organization's annual meeting.

M. MELLOR and L. J. Auten were added to the directorate of Ram River Oils, Ltd., when shareholders held their first annual meeting last week at Edmonton. Re-elected were L. B. Mowatt, president and managing director; F. D. Perry, secretary-treasurer, and S. W. Williamson, Charles Short, Fred Wailing, and Bruce D. Howatt, directors. The firm is drilling a wildcat test in the Ram River area of Alberta, Canada.

ANTHONY FOLGER, district geologist for Gulf Oil Corporation in Kansas, has been named chairman of the Kansas oil field nomenclature committee. He succeeds L. W. Kesler, Kansas district geologist for Sinclair Prairie Oil Company. Members of the committee are: Jimmy Daniels, Pryor & Lockhart, Inc.; L. M. Clark, Kansas district geologist for Shell

Petroleum Corporation; Granville Tierney, Kansas district land man for Amerada Petroleum Corporation; George Norton, Kansas district geologist for Atlantic Refining Company and president of the Kansas Geological Society; Howard Bryant, district geologist for Skelly Oil Company; Lee Cornell, of Stanolind Oil & Gas Company's Kansas geological staff and president of the Kansas Oil Scouts Association; E. G. Dahlgren, director of the oil and gas conservation division of the Kansas Corporation Commission, and Z. E. Stukey, district geologist in Kansas for Cities Service Oil Company.

WILLIAM D. McBEE, Gordon G. Guiberson, William M. Irish III, Theo F. Morton, H. H. Nourse and C. J. Paine comprise the committee in charge of the Dallas Petroleum Club's annual party to be held February 3.

FRITZ W. MARTIN, H. C. Skidmore, Earnestine K. Skidmore and Alma F. Martin, all of Shreveport, Louisiana, last week organized the F. & H. Oil Company as an Arkansas corporation. Headquarters will be maintained at Texarkana.

DAN S. KEENAN, vice president of Carnegie Natural Gas Company and Apollo Gas Company since May, 1938, last week was named president of both firms, succeeding S. W. Meals, who died January 4. Keenan became associated with the companies, which are subsidiaries of United States Steel Corporation, after serving United Carbon Company at Charleston, West Virginia.

SID W. RICHARDSON, of Richardson Oils, Inc., Fort Worth, Texas, is practically recovered from a broken leg suffered two months ago and plans to return to his office.

K. HUGHES, operator of Tyler, Texas, was in Evansville, Indiana, last week.

A. C. GALBRAITH, vice president of Union Oil Company of California, described the exhibit of the petroleum industry at the 1939 Golden Gate International Exposition to the San Francisco Advertising Club last week.

HERMAN HEEP, Raymon Howe, Frith Owens, G. D. Beauchamp, Ralph Maddox, George Snowden, Grady Duval and Bob Branch have organized Nueces Royalty Company at Corpus Christi, Texas, to operate as drilling contractors. The company has four rigs and already has contracted a number of wells.

C. L. NORSWORTHY, JR., John J. Barker, Wesley Davis and H. W. Campbell have organized The Barcade Corporation, Corpus Christi, Texas. Barker has been a geologist for Renwar Oil Corporation, while Campbell has been connected with the same company as scout. Davis has been geologist and petroleum engineer for Southern Minerals Corporation, for the past two years and before that time was affiliated with Shell Petroleum Corporation in the same capacity. Norsworthy is connected with Trinity Drillers of San Antonio. The new company has opened offices at 818 Nixon Building.

MILES SCULL, JR., has been named director of public relations for Lion Oil Refining Company, announced Col. T. H. Barton, company president.

BOUWE DYKSTRA, formerly chief exploitation engineer of the production department of Shell Petroleum Corporation in Tulsa, has been transferred to California and is now with Shell Development Company.

A. J. SCHLOSSER, general superintendent of the gasoline department of Barnsdall Oil Company, is to be retired March 1. One of the first natural gasoline plant builders in the industry, he will be succeeded by H. W. Manley, assistant chief engineer.

E. C. STEARNS is president of the Missouri Oil & Gas Association which has been organized at St. Joseph to serve as a clearing house for information and to promote ethical practices. Other officers are J. W. Rettig, Phillips Petroleum Company, vice president; S. O. Strucksberg, manager of the Robidoux Hotel, secretary-treasurer, and J. H. Stallard, president of the St. Joseph Real Estate Board, and Dan W. Cameron, Carter Oil Company, directors.

CARL ADDISON, chief of Pure Oil Company's Michigan division geological department, was chosen 1939 president of the Michigan Geological Society at the annual banquet last week. Addision succeeds Ben F. Hake, now division geologist for Gulf Refining Company with offices at Indianapolis. Hake was transferred from Michigan in the fall of 1938. After his transfer A. E. Newman, state petroleum geologist with the Geological Survey, vice president, acted as president. Other 1939 officers named were Jed Maiebus of Saginaw, Gulf Refining Company, vice president; Rex Grant, state survey, Lansing, secretary-treasurer; and Helen Martin, consulting geolcgist, Lansing, business manager.

C. HENRY AUSTIN has been promoted to a general attorney of Standard Oil Company of Indiana, and Fred B. Hanson, an attorney, has assumed the duties heretofore incumbent upon Austin in connection with personal injuries, garnishments and the claim adjustment department. Gordon E. Tappan of Port Huron, Michigan, will join the company as an attorney January 16.

Austin joined the company in 1924 as an assistant tax, legal and accident clerk in the Milwaukee sales division, and was promoted to an attorney at Chicago in 1926. He graduated from Washington University School of Law. Hanson, a graduate of Kent College of Law, joined the company in 1937 as an attorney. Tappan is a former assistant prosecuting attorney and assistant to the attorney general of Michigan. He graduated from University of Michigan school of law.

E. H. BECKMAN, formerly chief clerk for The Pure Oil Company, Houston, has been made scout for the company in the Gulf Coast area. He succeeds Tommy Miller who has been transferred as scout to Southwest Texas.

DOUGLAS CORGEY and Frank Grote of Corpus Christi are becoming one of the leaders in a number of drilling wells in South Texas with their deep drilling program at Aransas Pass. Now the company is planning 26 wells within the townsite. The company took over Losoya Oil Company's properties and permits and will commence the first well before March 1, drilling the remainder in rapid order. These operators have completed a number of good producers in the 7100-foot sand in the McCampbell field in an area opened by them several months ago.

ALLEN and MORRIS are further enlarging their quarters in the Alamo National Building, San Antonio. W. C. Morris, brother of Joe S. Morris, and an attorney, is entering the firm. Joe Morris and W. W. Allen have been in the contracting and producing business a number of years.

ROY PAYNE, Gulf Oil Corporation geologist, recently was assigned to Corpus Christi.

JOE MANRY has been transferred to Corpus Christi to scout for the Pan American Production Corporation.

CARLETON WEAVER has been transferred from San Antonio to Illinois to continue his duties for Bishop Oil Company.

A. J. SCHLOSSER, superintendent of the gas and natural gasoline department of Barnsdall Oil Company, will retire March 1, after 34 years of activity in the oil industry. He will be succeeded by H. W. Manley, division engineer and assistant to Schlosser.

Schlosser helped in the construction of the Maysburg, Pennsylvania, gasoline plant of the South Penn Oil Company in 1903. Later he went with the Potter Oil & Gas Company of Pittsburgh, a concern which became a part of the Barnsdall interests.

Manley has been with the Barnsdall Oil Company since 1929, when he became a division engineer. Previously while attending Oklahoma Agricultural & Mechanical College, he had worked for the concern in the Seminole area.

JOHN BEVEL, who has been scout for Gulf Oil Corporation in Kansas for years, has been transferred to new eastern division at Indianapolis. He will be assigned to one of the districts of that division as scout.

DIED:

E. P. KILGORE, 53, prominent Oklahoma oil operator, died after a brief illness at his home in Oklahoma City, January 18. He drilled the well which opened the Kilgore pool in southern Oklahoma.

CHARLES F. LEECH, superintendent of industrial relations for Indian Territory Illuminating Oil Company, Bartlesville, died at his home there January 14. The funeral was held in Bartlesville January 17. He was with the company for 30 years and headed the industrial relations department for 10 years. Leech was a civil engineer, who worked for the Osage nation from 1903 to 1909. During that time he laid out several of the towns which later were familiar to oil field development in Osage County.

ARTHUR D. ROBINSON, 55, North Texas oil producer, died January 13 at his Dallas residence after a short illness.

THE WEEK'S NEWS SUMMARIZED

Curtailment

Bureau of Mines estimates demands for February will be but 3,200,000 barrels a day, the lowest for any month since March of 1937. This is 50,600 barrels, or 1.5 percent less than the estimate for January. Explanation of the low estimate is based on anticipated lower gasoline stock increases, higher gasoline yield and a sharp decline in crude used for export.

California will hold a series of important curtailment meetings this week, which is hoped will result in a further reduction of the state's production by 5000 barrels. The most important will be at Ventura Avenue. In addition the regular monthly meeting of the Central Committee to establish the February allowable will take place. It is anticipated that the figure of 600,000 barrels daily will be continued.

Operators in the Clare, Michigan, field set up a new proration schedule last week recognizing both pipe line nominations of three buyers and 20-acre spacing. The new schedule figures 221 barrels per well for 10-acre spacing and 325 barrels for wells on 20-acre spacing.

South Penn Oil Company last week lifted curtailment in lines of Bradford Transit and Eureka Pipe Line companies, thereby ending curtailed purchases that have been in effect in the Bradford field since May, 1938.

Legislation

With state legislatures now in session, several bills of importance to the oil industry were introduced or being considered.

In Washington, D.C., California congressmen were mapping plans to prevent passage of the Nye resolution, which would give the federal government title to off-shore oil fields.

Texas' new governor, Lee O'Daniel, in his first message presented a drastic tax measure for the purpose of raising funds to pay $30 monthly to those over 65 in need. He proposed a transaction tax of 1.6 percent every time a commodity changed hands. In order to insure an increase in the tax on crude oil, the bill provides for a special severance tax of 1.6 percent of the value in case the measure might be ruled unconstitutional. The bill would tax gasoline every time it changes hands, on crude every time it moves, and on every oil field piece of equipment.

A measure that would give the State of California power to engage in oil development, including pipe lines, has been introduced. Profits from such endeavors would be used to pay old age pensions.

Governor Horner of Illinois urged careful consideration of new legislation covering oil and gas production, but avoided specific recommendations. He did mention, however, the demand coming from some sources for a law regulating the production and transportation of petroleum and its products.

Regulation of oil may precede its being produced in Iowa, where a bill has been introduced to regulate drilling and operation of oil wells. So far only leasing activity has developed in the state.

Oklahoma saw the introduction of a bill that would continue the state's membership in the Interstate Oil Compact, should the pending measure for its extension be approved by Congress in Washington.

A measure in New Mexico sought a constitutional amendment to allow leasing of state lands up to periods of 20 years.

A gross production tax of three percent is sought in a bill introduced to the Kansas legislature.

Markets

The industry's markets remain unsettled, particularly in the crude oil division. Substantial quantities of current crude oil production are without firm market demand, especially in the Mid-Continent, Illinois and Michigan.

Illinois is still encroaching on the markets previously supplied by Oklahoma and Kansas crude, not only because of the geographic advantage of the state but also because of price cutting. Some Illinois crude is said to be going at less than 50 cents a barrel, although the posted price in the Basin is $1.15.

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Allowable Picture

February crude requirements estimated 3,200,000 barrels daily . . . California's curtailment may lower output of 50 fields . . . Hearing on Griffin recessed

Bureau estimates lowest demand since March of 1937

Forecasting the lowest daily average crude production predicted for any month since March, 1937, the Bureau of Mines on January 20 estimated that requirements for the coming month would be but 3,200,000 barrels a day.

The February average is 50,600 barrels, or 1.5 percent, less than the estimate for January and four percent lower than the actual demand for domestic crude in February, 1938.

The bureau explained that the estimate is lower than for a year ago because of an anticipated gasoline stock increase of only 4,500,000 barrels, compared with an actual increase of 5,904,000 barrels last February, a gasoline yield estimated at 44 percent compared with an actual yield of 42.8 percent a year ago, and a sharp decline in crude used for export, fuel and losses.

While the bureau estimates a daily crude output of 3,220,000 barrels for next month, there are possibilities that actual production may fall below that figure, estimates for every month since last May being well above actual operations. In the latest month for which production figures are available, November, the bureau estimate was 105,700 barrels above real output, but indications are that a slighter disparity prevailed in December.

"Daily average crude-oil production and runs to stills during the four weeks December 3 to December 31 were 3,306,300 and 3,156,200 barrels, respectively," the bureau explained in that connection. "During this period total crude stocks (including heavy crude in California) increased 1,692,000 barrels. Of this increase 828,000 barrels was in foreign stocks, leaving a net increase in domestic grades of 864,000 barrels. The daily average of this figure (30,900), subtracted from the production, gives 3,275,400 barrels as the apparent daily average demand for December, compared with 3,305,800 barrels as forecast by the bureau."

Commenting upon the outlook for motor fuel, the bureau pointed out that "the weather in February during the past 13 years has been the most variable of any month and the variations have been most extreme.

"Such weather conditions," is was emphasized, "add to the difficulty in estimating motor-fuel demand and may result in a difference of more than a million barrels in gasoline consumption either above or below normal." The bureau estimates the domestic motor-fuel demand as 33,400,000 barrels, an increase of five percent over the 1938 demand. "The estimated increase in demand is based on improved business conditions and the long-time upward trend of motor fuel demand per vehicle."

Motor Fuel Exports

Motor fuel exports, based upon forecasts of exporters, are estimated at 3,400,000 barrels, and the increase in finished gasoline stocks is placed at 4,500,000 barrels, the bureau pointing out in this connection that stocks of finished and unfinished gasoline on November 30 totaled 69,535,000 barrels, and, according to statistics of the American Petroleum Institute were, increased about 2,800,000 barrels during December, bringing them to approximately 72,400,000 barrels at the close of the year.

Benzol and direct sales and losses of natural gasoline are estimated at 1,100,000 barrels, making refinery production 40,200,000 barrels, which the bureau recommends be distributed among the various districts as follows: East Coast, 5,220,000 barrels; Appalachian, 1,330,000 barrels; Indiana-Illinois, 7,120,000 barrels; Oklahoma, 660,000 barrels; Kansas-Missouri, 2,070,000 barrels; Texas inland, 2,830,000 barrels; Texas Gulf Coast, 10,280,000 barrels; Louisiana Gulf Coast, 1,220,000 barrels; North Louisiana-Arkansas, 780,000 barrels; Rocky Mountain, 1,050,000 barrels; California, 5,640,000 barrels.

Natural Gasoline Consumption

Natural gasoline consumption at refineries in February is estimated as 6.5 percent of the total production, or 2,610,000 barrels, and the yield of straight-run and cracked gasoline at 44 percent. Application of this yield to the straight-run and cracked production of 37,590,000 barrels gives crude runs of 85,360,000 barrels, or 3,048,600 barrels daily. Foreign crude runs are estimated as 2,000,000 barrels.

The estimate for February exports of crude is 4,600,000 barrels, a drop of 1,200,000 barrels from the January figure, which the bureau points out reflects not only the shorter month but also a less optimistic view of exporters. Crude used for fuel and losses is estimated at 2,200,000 barrels.

Requirements by States

Total demand for domestic crude in February is, therefore, 90,160,000 barrels, or 3,220,000 barrels daily, with daily average requirements by states as follows:

Texas, 1,297,500 barrels; California, 580,000; Oklahoma, 482,500; Louisiana, 246,800; Kansas, 148,600; Illinois, 102,500; New Mexico, 99,600; Wyoming, 57,100; Arkansas, 48,200; Michigan, 47,200; Pennsylvania, 43,200; Kentucky, 17,100; New York, 12,100; Montana, 12,100; West Virginia, 10,000; Ohio, 9000; Colorado, 3600; Indiana, 2900.

Clare, Michigan, operators agree on proration schedule

The Freeman Proration Committee, voluntary organization of operators in the Clare, Michigan, field, set up a new proration schedule last week recognizing both pipe line nominations of the three buyers in the pool and 20-acre spacing.

The three buyers, Simrall Corporation, Pure Oil Company and Leonard Pipe Line Company, made a gross combined nomination of 10,250 barrels daily. Actual runs in December averaged 6676 barrels per day.

The new schedule figures out an allowable of 221 barrels per well on a 10-acre location and 325 barrels on a 20-acre location. This was arrived at by taking 50 percent of the 10,250-barrel nomination and equalizing it among 44 wells, plus a 50 percent per-acre allowable.

California curtailment meetings set for this week

California's contribution to the oil curtailment program in more than 50 fields, is well into the home stretch this week, with important meetings scheduled at Ventura and in Los Angeles and minor sessions slated for districts that need a little more missionary work by the committee, which was organized nearly a month ago to see that a crude price cut is not announced due to excessive production.

Tuesday at 2 p.m., the Ventura Avenue operators will meet with E. E. Pyles, chairman of the emergency executive committee of independent oil producers. This session, which is expected to be warmer than the one held last week in Bakersfield will probably bring together Pyles and Ralph B. Lloyd, wealthiest royalty owner on the Pacific Coast. The committee, which has obtained all its data from the oil umpire, to bolster its campaign to reduce the state's excessive production, will be well fortified with figures Tuesday, intent upon bringing this field into line.

Widely Attended

Not since 1930, have curtailment meetings been so widely attended.

The regular monthly meeting of the Central Committee of California Oil Producers also will meet this week to set the February quota. On Thursday the allocation committee headed by L. L. Aubert will make a proposal that the current allowable figure of 600,000 barrels daily be continued, it is believed, and the central committee is expected to adopt the same figure which corresponds to the goal set by the emergency committee.

Pyles revealed that a further reduction of approximately 5000 barrels daily in oil output resulted when the Huntington Beach operators voted to make this cut. Huntington Beach operators voted not to produce more than 300 barrels a day from any one well, this program being similar to that agreed to by operators in Wilmington-Long

Beach, Rio Bravo, West Montebello and other fields.

The fact finding committee, selected earlier this month, met last Friday night in Bakersfield, and conducted an open house inviting all San Joaquin Valley producers to make suggestions. Ideas will be pooled and presented to the executive committee, and these will be submitted to the petroleum industry late in January for discussion.

Sectional curtailment of the Signal Hill oil field, California, continues. An increase of 5 percent in the number of wells participating as compared with one week ago is reported by the Emergency Executive Committee of Independent Oil Producers, headed by E. E. Pyles.

Area No. 1 was shut in early last week. It includes 220 wells with a daily output of 6650 barrels of which 165 wells shut in 5475 barrels for 24 hours while 55 remaining on production yielded 1175 barrels. The field is expected to have another section, No. 6 and possibly a seventh to aid the drive to cut the field's excessive yield.

A chairman to direct the work of a new field committee to be in charge of production curtailment at Signal Hill was scheduled to be elected soon, this selection to be taken from nominees including Wilbur Harrison, John Hancock, Neil Elder and John Augsberger.

Another general meeting of operators was held at Bakersfield January 18, during which operators from many of the San Joaquin Valley fields attended. Representatives from the following fields attended: Mountain View, Fruitvale, Kern Front, Round Mountain, Kern River, Coffee Canyon, Poso Creek and Edison.

Jerry Sadler's first hearing is recessed

The Texas Railroad Commission has recessed until January 28 its hearing on the Griffin pool in Jones County. This action was taken after the hearing had begun last week when Dee Humphrey, Dallas operator, declared that he felt royalty and land owners were not fairly represented at the hearing, and that they would not approve the wide spacing which producers were asking.

Major companies operating outside the townsite asked for 20-acre spacing based on their experience in the Avoca field, four miles away. The new Griffin pool takes in the townsite of Avoca, and operators with leases in that area asked for one well to 10 acres. Royalty owners present, however, suggested that at least one well should be drilled to each city block.

Commissioner Jerry Sadler, before whom the hearing was held, agreed to the delay and also to the suggestion that the hearing be held at Avoca in order that all interested parties could appear. This is the first field hearing which Commissioner Sadler has attended.

Witnesses testified that producing conditions in the Griffin pool are the same as those in the Avoca field and that the fields are separated by several dry holes, one of which was 70 feet lower than wells drilled in either field. Griffin producers usually come in for about 120 barrels, and are through a ¾-inch choke.

Legislation Affairs

Many oil measures are introduced at various state legislatures . . . Texas' Governor O'Daniel proposes to tax all transactions 1.6 percent of their value

California plans to fight for tidelands

Members of the California delegation in Washington, caught napping in the last Congress when the Senate took up and passed the Nye resolution looking toward assertion of the title of the federal government to the California off-shore oil fields, last week began consideration of the strategy to be adopted to keep the measure from enactment.

The resolution was reintroduced by Senator Nye (Rep., N. Dak.) early in the session.

California members of the House have conferred regarding the situation and appointed Representatives Lea, Tolan and Carter as a committee to work with the California senators in opposition to the measure.

The Nye resolution went through the Senate without much attention being paid to it but was snarled up in the House Judiciary Committee when California congressmen succeeded in having it amended to cover all coastal lands and thus aroused the opposition of the Gulf and Atlantic states.

The Nye resolution also will be opposed by the delegations from the coastal states other than California it was indicated January 20 when Senator Tom Connally of Texas protested the legislation in a letter to Senator Alva B. Adams, chairman of the senate public lands committee, to which the measure has been referred.

Senator Connally pointed out that "the resolution is primarily directed at coastal lands adjacent to the state of California but might possibly affect coastal lands adjacent to other states.

"I am strongly opposed to the resolution and beg to request that I have opportunity to appear before the committee before any action is taken on the resolution.

"When Texas achieved its independence and established a republic, it acquired title and ownership to all coastal lands. When it entered the Union it retained title and ownership to all such lands.

"By no exercise of power can the United States divest Texas of the ownership of these lands. I solemnly protest the passage of the resolution."

Texas' new governor would tax all business

Plans for paying a $30 old age pension were presented to the Texas legislature last week by Governor Lee O'Daniel in his first message to that body. He proposed a transaction tax of 1.6 percent in order to guarantee an income of $30 to all persons 65 years of age.

Legislators and legislative observers were so shocked by these proposals that 24 hours later they still declined to comment other than state that the bill had shown a lot of thought, or that the governor was certainly courageous. While a large portion of the public thought the governor had presented a sales tax to pay pensions, he had, as a matter of fact, presented a pyramided sales tax—a plan so much more drastic than the original sales tax that no other legislature or governor has ever had the temerity to suggest it.

The only exemptions from this transaction tax would be the first sale of agricultural products and livestock; salaries and professional fees; street car fares up to a dime, newspapers sold on the street and certain charities.

With the $45,000,000 which he expected the tax would raise, O'Daniel would determine whether pensioners had an income last year of $30 a month or more. The plan he proposed would require the state to supply the difference if the pensioner's income averaged less than $30 a month. This responsibility, however, he would divide equally with the federal government.

The bill defines "transactions" as any dealing of "whatsoever nature." However, the cashing of a check is exempt from tax, presumably because this is merely the conversion of funds from one form to another; that is, it is not a transaction from which profit may result.

Increase Oil Taxes

In order to insure an increase in the tax on crude oil, the bill provides that should the measure be held unconstitutional, a special severance tax of 1.6 percent of the value of oil is imposed. O'Daniel stated in his message that he had abandoned the original plan of placing the entire burden on the natural resources industry.

While the bill would provide for an additional tax on gasoline every time it changes hands, on crude every time it moves, and on every piece of equipment the oil industry buys or sells, some relief would be granted under another provision of the bill.

O'Daniel included a provision which would cancel all ad valorem taxes paid to the state, about half that collected, since county ad valorem taxes would not be affected. This might be of some assistance to oil companies with large property holdings which are now assessed heavily.

Under the constitutional amendment O'Daniel proposed, the plan outlined in his bill would be voted on by the people in June of this year and become effective on September 1, 1939, if it passed. Since the plan would then be

a part of the Texas constitution, it would not be subject to a legislative adjustment at any time in the future, unless another constitutional amendment provided for such adjustments.

The general opinion was that O'Daniel had worked out one of the most onerous tax plans to support the most generaus pension payment so far offered, and as he remarked, "it's now up to the legislature." While the legislature does have the "out" of passing along the right to vote on the question, the measure will not be submitted by the two-thirds vote required until a long and bitter battle has been waged.

Apparently O'Daniel has revised his campaign promises of economy in government, since he plans to approve a tax increase he estimates "conservatively" at $45,000,000 a year, with which to create surpluses and other funds for operating the state government.

Oklahoma initiates bill to extend compact membership

First state of the six members of the Interstate Oil Compact Commission to take action looking to extension of the legislation was Oklahoma, whose senate January 17 passed a bill to that effect. With approval in the house and the signature of the governor it will keep that state in the compact for two years from September, 1939.

Pending in Washington is the bill which will extend the act from the federal viewpoint. Leon C. Phillips, new Oklahoma governor, has indicated a desire to retain membership in the compact. All senators and congressmen from Oklahoma are expected to support the federal legislation.

Only change in the situation in Oklahoma is the representative of the governor on the commission. During the administration of E. W. Marland, Tom Anglin was his representative. Anglin again is a member of the Oklahoma state senate. Although no announcement has been made Governor Phillips is expected to choose Robert E. Kerr, president of Kerlyn Oil Company, Oklahoma City, as the representative.

California may engage in the oil business

A measure that would give the State of California power to engage in oil development, acquire and build pipe lines and obtain property for maintenance of tank farms has been introduced in the state assembly by Jack B. Massion, representative of Los Angeles County. Profits from the state's oil operations would be used for payment of old age pensions.

The bill would end the present system of bidding on state-owned lands by private companies.

Another oil measure before the legislature, introduced by Assemblyman Samuel W. Yorty of Los Angeles County, would enact certain features of the Olson Oil Act defeated at the general election last November. It would provide a minimum royalty be given the state from wells producing on state-owned lands and would give the state the right to drill only in cases where satisfactory bids were not received from private individuals or companies.

Illinois governor's message general on oil control

Governor Henry Horner, in his message to the Illinois legislature read last week, urged careful consideration to new legislation covering oil and gas production but avoided specific recommendations.

"Due to the increased production of oil and gas in the new fields of Illinois, requests have come from within as well as without the state for laws regulating the production and transportation of these products," he said.

"Illinois oil production has not heretofore been of sufficient proportions to require legislative attention. The many business ramifications of the production, transportation, and sale of oil and gas and their allied products, present a problem that should be carefully studied by you.

"In your deliberations regarding this matter, it should be kept in mind that the daily consumption of these products in our state is still many times our present production.

"This new industry has brought prosperity to a large portion of our state, certainly its continuance should be fostered and no legislation should be enacted that will insure the advantage of the industry in other states to the injury of those in our own. Any measures considered should have for their fundamental purpose the protection of the rights of our citizens and property owners. We consider this a matter which merits your consideration."

New committees in both the senate and house are being created for the first time this session to conduct hearings on oil and gas measures. Members of the senate committee, named last week, are: William J. Connors, Chicago, chairman; H. S. Burgess, Fairfield, vice chairman; John B. Geary, A. L. Marovitz, Peter F. Kielminski, Frank McDermott, D. A. Serritella and James B. Leonard, all of Chicago; Melvin Thomas, Charleston; John W. Fribley, Pana; Louis J. Menges, East St. Louis; Earl B. Searcy, Springfield, and C. L. Ewing, Douglas.

New Mexico introduces state leasing bill

A measure seeking a constitutional amendment to allow leasing of state lands up to periods of 20 years was introduced in the New Mexico legislature last week. It was described as the keystone of oil development legislation to receive consideration at the current session.

The 20-year lease is declared necessary if exploration for and development of oil and gas is to take place in Arizona on a commercial scale.

Three percent production tax sought in Kansas

Gross production tax of three percent for Kansas oil is sought in a bill introduced before the state senate at Topeka. Its sponsor, Senator McDonald, Wyandotte County, would use the receipts, estimated at $3,000,000, to provide free textbooks for public school children and for other support of public schools.

This would allow the full collection from the two percent general sales tax to be used for the social welfare board. Schools now draw funds from a part of the sales tax.

Washington leasing bill is introduced

Two measures regarding oil and gas development were introduced in the Washington state legislature last week. One would provide a minimum leasing fee of 15 cents an acre for state lands with leases limited to 640 acres, with a 12½ percent minimum royalty to go to the state if production is obtained. Leases would be void if drilling is not started within five years.

The second measure would require a $100 license for drilling, and carries the additional provision that an exclusive drilling permit be granted a co-operative or pooled-interest group holding 75 percent of a given structure under lease.

Iowa proposes oil control law "just in case"

Regulation may precede actual exploration for oil in Iowa, it was indicated last week when Representative James A. Lucas, Republican of Taylor, announced he would introduce a bill in the state legislature to regulate drilling and operation of oil wells. A companion measure will be introduced in the upper house by Senator O. J. Kirketeg, Republican of Taylor.

Lucas, pointing to leasing activity in southwestern Iowa, said his bill is not being introduced in the belief that oil will be found in great quantities in the state but so as to have control legislation on the statute books in the event oil development materializes. As yet, no test wells have been started in the state.

The proposed Iowa measure will follow closely existing laws of Oklahoma and Texas and would provide for compulsory offset drilling to producing wells. Lucas said that in Taylor County alone, one of 14 included in the Forest City basin, leases have been taken on 70,000 acres.

Pennsylvania investigation report due within two weeks

Submission of the report of Pennsylvania's oil industry investigating commission will be made within two weeks, according to Senator B. B. McGinnis, commission member. The commission, first created by the 1937 legislature, had been commanded to investigate all branches of the oil industry and to recommend legislation as to whether it should be regulated as a public utility.

While declining to reveal the nature of the report, Senator McGinnis said it would be "broad and significant." The commission met in Pittsburgh last week to pass on a final draft of the report prepared by Samuel Ross, commission secretary and member of the faculty of Carnegie Institute of Technology.

After being found unconstitutional by the state supreme court, the commission was re-created by a special session

of the legislature late in 1938. Its personnel, which originally included a representative of producers, one of distributors and one of the public, was changed to an all-legislative commission.

Numerous hearings were conducted by the two bodies, statistical surveys were made with the help of the Works Progress Administration and thousands of questionnaires were sent out to gather the information on which the report will be based.

Prepared for introduction shortly is a bill prepared by the Central Pennsylvania Oil Producers' Association designed to "protect the crude oil resources of this commonwealth from waste and destruction."

The bill would create a commission "to effectuate the purposes of the act," would provide remedies for prevention of waste and destruction and would set penalties for violation. The commission would consist of three members, "preferably persons thoroughly familiar with the production of oil," to be named by the governor, one from the Bradford district, one from southwestern Pennsylvania and the third from the intermediate district.

Pipe Line News

Third gas company proposes North Dakota-Minnesota line

A third natural gas company last week applied for federal power commission authority to enter the North Dakota and Minnesota market. Pipe line projects by Kansas Pipe Line & Gas Company and Public Service Gas Company are already before the commission.

The North Dakota Consumers Gas Company would build lines from Mandan to Fargo, from Fargo to Grand Forks, all in North Dakota, and from Grand Forks to Crookston, Minnesota. The company opposes the applications of Kansas Pipe Line & Gas Company and Public Service Gas Company in that they would serve some of the same 33 communities included in the North Dakota Consumers Company's project and would hamper development of gas fields in western North Dakota and eastern Montana.

Kansas Pipe Line & Gas Company would transport and market gas from southwestern fields, while Public Service Gas Company would tap Wyoming and Montana fields. The North Dakota Consumers Gas Company's project contemplates an expenditure of $4,254,300 in pipe lines and distribution systems.

Imperial Pipe Line valued at $1,400,000

Property of Imperial Pipe Line Company, Ltd., used for common carrier purposes was valued last week by the Interstate Commerce Commission at $1,400,000. The company operates trunk lines in Ohio and Michigan that are part of the Standard Oil system.

Market Situation

Both crude and refined prices remain unchanged despite weak spots . . . Globe ceases buying in Oklahoma City field to purchase Illinois crude oil

Markets still unsettled but prices unchanged

The oil industry's markets have continued unsettled, although the past week did not bring any material changes in prices of either crude oil or refined products.

Crude oil production has risen in recent weeks to relatively high levels, and considerable current output is without firm market demand, particularly in the Mid-Continent, Illinois, and Michigan.

California production has been curtailed to a gratifying extent and the threat of lower crude prices there has diminished, although the state's output has not yet been brought down to desired levels.

As throughout the past year, Oklahoma and Kansas fields are suffering heavily from curtailed market demand, as flush production of the new Illinois fields has continued to encroach on markets formerly supplied with Oklahoma and Kansas oil.

It was reported that late last week approximately 3000 barrels daily of Oklahoma City crude was left without a market, when purchases of that amount were shifted to Illinois.

Although Illinois Basin crude is priced at $1.15 a barrel regularly, it is reported that some oil in the state is selling for less than 50 cents a barrel.

Illinois production has continued to increase, and is now up to about 135,000 barrels daily, as compared with 35,000 barrels daily a year ago.

Refined Oil Markets

The markets for refined products last week appeared somewhat steadier than in the previous week. Whereas prices previously were on a down trend, they were mostly unchanged last week.

Crude runs to refinery stills have been heavy since the beginning of the new year and gasoline production has been large, but the weather has been better than normal for the season, and consumption has been sufficiently large to prevent large additions to storage. Consequently, the gasoline market last week was relatively firm, and prices were generally steady.

The fuel oil markets have remained good, as consumption of the lighter oils has been seasonally large, while some pick-up has occurred in demand for the heavier, industrial fuel oils, along with the improvement in general business conditions.

Globe withdrawing as buyer of Oklahoma City crude

Globe Oil & Refining Company last week withdrew as a purchaser of oil in the Oklahoma City field. Requirements for its plant at Lemont, Illinois, are being met by production and purchases in the new Illinois fields. Its McPherson, Kansas, plant is supplied by Kansas production.

Recently the company has been buying around 3000 barrels daily at Oklahoma City.

Oklahoma-Kansas stripper purchases are reduced

National Refining Company has reduced purchases from Oklahoma and Kansas stripper wells to 70 percent of 1938 average purchases. Daily purchases have been 8000 barrels; 5000 from Oklahoma fields, 3000 from Kansas fields. Continued softness of refined market caused the retrenchment. Since May 1938 it has been buying only 90 percent of output of leases to which it is connected.

Prices generally steady; fuel oil quotations up

Although there were still some weak spots in the crude oil markets, prices of petroleum products last week were generally stable.

Gasoline prices were mostly unchanged, although tank car quotations were off another one eighth cent in a few instances.

Kerosene prices held steady in all districts.

The fuel oil markets continue fairly strong. Prices of the lighter oils were advanced one eighth cent a gallon last week in the Chicago area by some sellers, as demand continued seasonally good.

The heavier oils also have come into fair demand, although prices have remained largely unchanged.

Natural Gasoline

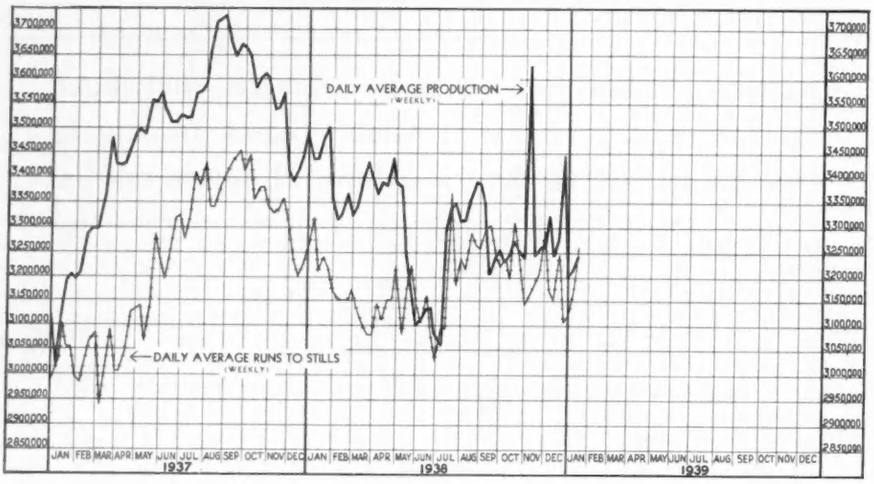
Natural gasoline, grade 26-70, was priced generally in the Mid-Continent markets f.o.b. refineries at 2¾ to 3 cents a gallon, and sales were reported at those same prices f.o.b. Breckenridge, Texas.

Gasoline Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 3⅝ to 4¼ cents a gallon; 63 to 66 octane, 3⅞ to 4½ cents; 67 to 69 octane, 4⅛ to 4⅝ cents; 70 to 72 octane, 4⅛ to 5 cents.

Corresponding prices in the Chicago market were 3⅛ to 4 cents, 3⅝ to 4½

United States Crude Oil Production and Refinery Runs



cents, 3¾ to 4½ cents and 4 to 4⅝ cents.

In East Texas, 60-62, 400 end point gasoline was priced generally at 3¾ to 4 cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3⅞ to 4¼ cents a gallon for the 41-43 water white grade, and from 4 to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3¾ to 4⅛ cents and 3¾ to 4⅜ cents.

Fuel Oil Quotations

In the Chicago market range oil was priced from 3½ to 4 cents a gallon. The No. 1 white oil was priced from 3½ to 3⅞ cents, and No. 1 straw from 3½ to 3¾ cents. No. 2 straw was 3⅜ to 3⅝ cents. No. 3 oil was 3⅛ to 3⅜ cents. No. 5 oils were 57½ to 65 cents a barrel. The No. 6 oil was quoted at 30 to 45 cents.

Refinery runs are higher and gasoline stocks up

The latest weekly statistics of the oil industry indicated that operations at wells and refineries were higher than desirable. Both crude oil production and refinery runs were up, and stocks of gasoline increased. Some fuel oil was taken out of storage, and crude oil stocks were pulled upon to some extent, because of the heavy runs to refinery stills.

United States crude oil production averaged 3,243,600 barrels daily in the week ended January 14, which was about 30,000 barrels a day more than in the previous week, although approximately 25,000 barrels a day less than the indicated total market demand for domestic crude, as estimated by the Bureau of Mines. The bureau's figure does not, however, indicate what part of the demand should be met from current production and what part from storage.

Crude runs to stills averaged 3,260,000 barrels daily in the week ended January 14, having increased by the relatively large amount of 90,000 barrels over the daily average of the previous week. For the first time this winter, the runs were larger than in the corresponding week a year previously. In the week ended January 15 a year ago the runs averaged 3,240,000 barrels daily.

Gasoline stocks increased almost a million barrels in the week ended January 14, having risen to 73,752,000 barrels. They were then 8.8 percent lower than one year previously, although the stocks were excessive a year ago.

Fuel oil storage was reduced approximately a million barrels in the week ended January 14, having come down to 142,460,000 barrels. Those stocks then were 19.9 percent larger than a year before. But the increase was fairly well justified, as fuel oil demand is running materially higher this winter than last winter.

Crude oil stocks were reduced about 700,000 barrels in the week ended January 7, having declined to 272,325,000 barrels. The crude storage is at a level 10.1 percent lower than a year ago.

Pipe line proration is lifted in Bradford field

South Penn Oil Company last week lifted curtailment in lines of the Bradford Transit Company and the Eureka Pipe Line Company, thereby ending curtailed purchases that had been in effect in the Bradford field to some degree since May, 1938. Previously, Quaker State Oil Refining Company, United Refining Company, Bradford Oil Refining Company and Kendall Refining Company had announced return to normal runs.

"For the remainder of January and for the month of February, the South Penn Oil Company will accept the full daily average amount of crude stated in its crude purchase contracts with producers served by lines of the Bradford Transit Company," the South Penn Company's announcement stated.

At the same time, the company announced that similar action would become effective January 16 for patrons served by Eureka Pipe Line Company. "We find that the current demand for Eureka grade oil is sufficient to permit us to purchase a larger amount," the announcement stated. "Consequently, on January 16 and until further notice we will accept any amount equal to 100 percent of all purchases during the

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
September 25, 1937	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
January 1, 1938	3,436,600	3,320,000	303,468,000	77,291,000	118,660,000
January 29	3,357,650	3,170,000	304,286,000	84,844,000	118,793,000
February 26	3,322,800	3,170,000	305,167,000	90,719,000	120,958,000
March 19	3,322,550	3,080,000	306,380,000	*93,192,000	122,067,000
March 26	3,405,600	3,080,000	307,557,000	92,858,000	122,979,000
April 30	3,396,150	3,215,000	307,147,000	91,339,000	128,270,000
May 28	3,098,650	3,150,000	301,583,000	87,946,000	134,315,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	137,801,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	144,294,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	146,926,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	150,468,000
October 1	3,231,800	3,235,000	280,852,000	68,602,000	151,759,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	153,719,000
November 12	3,243,250	3,180,000	273,394,000	67,551,000	*154,666,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	153,634,000
December 10	3,245,100	3,150,000	†269,509,000	68,587,000	150,779,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	144,823,000
January 7	3,214,900	3,170,000	272,325,000	72,818,000	143,333,000
January 14, 1939	3,243,600	3,260,000	.....	73,752,000	142,460,000
January 15, 1938	3,476,900	3,240,000	‡303,078,000	80,947,000	118,962,000
Change in past year	—6.7	+0.6%	—10.1%	—8.8%	+19.9%

* All time peak. ‡ Stocks, January 8, 1938. † Lowest for 17 years.

An Announcement . . .

The Youngstown Sheet & Tube Company and The Republic Supply Company of California have purchased a substantial stock interest in the Emsco Derrick & Equipment Company.

The Continental Supply Company, Continental Emsco Co. Inc., and The Republic Supply Company of California will continue their present distribution of Emsco products.

This closer relationship between the manufacture and distribution of Emsco products will bring an improved service to the oil industry.

THE YOUNGSTOWN SHEET & TUBE COMPANY

THE REPUBLIC SUPPLY COMPANY OF CALIFORNIA

month of September, 1938, instead of 75 percent, as outlined in our letter of curtailment dated October 31, 1938. We urge our patrons to regulate their deliveries to the Eureka Pipe Line Company so as not to exceed the amount asked for."

Drilling permits in Texas are 229 for week

Permits for drilling 229 new wells in Texas were approved by the Texas Railroad Commission last week, 41 more than were allowed the week before.

Operators in the East Texas field were allowed to drill 7 wells, including 4 in Rusk, 2 in Gregg, and 1 in Smith County. Six locations were reported from the remainder of the East Central Texas area.

There were 65 locations reported from the Gulf Coast area, including 13 in Harris County, while Southwest Texas operators were allowed 27 permits with 16 in Duval County.

The commission approved 25 new locations in the West Texas district, while West Central Texas operators listed 7 new locations.

There were 13 permits allowed in the Panhandle area. Operators in North Texas reported 79 new locations, including 33 in Wichita, 22 in Clay, and 12 in Archer County.

Crude Production

United States output declines 1825 barrels daily to 3,253,425 barrels . . . 17,715 under bureau

AFTER a continuous increase in production for several weeks, daily crude output in the United States declined slightly during the week ended January 21, when it averaged 3,253,425 barrels. That was 1825 barrels a day lower than in the previous week and 17,175 barrels lower than the federal estimate of domestic requirements for the month of January.

Responsible for the small decrease was curtailed production in Texas, California and Louisiana which exceeded minor gains in Oklahoma and Kansas.

Texas output was down 14,250 to 1,280,400 barrels daily, which was 52,500 barrels less than the Bureau of Mines recommendation and 39,142 barrels daily less than the state proration program.

California production declined during the past week to 633,100 barrels, having curtailed its production by 6300 barrels a day. However, daily production exceeded the federal allocation by 44,700 barrels and the recommendation of the Central Committee of California Oil Producers by 28,100 barrels daily.

Oklahoma showed a gain of 5975 barrels, the average output being 426,925 barrels a day. That was 72,775 barrels a day less than the Bureau of Mines recommendation and 1075 barrels less than the allowable prescribed by the state.

Louisiana last week averaged 260,625 barrels daily, which was 4225 less than in the previous week, but remained 18,725 barrels daily above the estimated demand and 9285 barrels above the state allowable.

Kansas slightly increased its production, recovering 155,200 barrels daily, which was 1300 barrels more than the Bureau of Mines estimate and the state allowable.

DON F. GERSTENBERGER, formerly of Tulsa, has been named manager of Idaho Refining Company, of Pocatello, Idaho, and of Empire Refining Company, of Spokane, Washington.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Jan.)	State Allowable in Jan.	BARRELS DAILY FOR WEEK ENDED Jan. 21	Jan. 14
TEXAS—				
Texas Panhandle	.....	.....	57,600	68,350
North Texas	.....	.....	79,600	79,200
West Central Texas	.....	.....	30,800	30,200
West Texas	.....	.....	203,900	204,100
East Central Texas	.....	.....	92,300	95,600
East Texas Field	.....	.....	372,600	373,400
South Texas	.....	.....	231,800	231,500
Texas Gulf Coast	.....	.....	211,900	212,300
Total Texas	1,332,900	1,319,542†	1,280,400	1,294,650
CALIFORNIA—				
Long Beach	.....	.....	48,300	49,500
Santa Fe Springs	.....	.....	30,600	29,600
Huntington Beach	.....	.....	29,100	28,800
Dominguez	.....	.....	21,000	22,000
Ventura Avenue	.....	.....	34,300	34,900
Midway-Sunset	.....	.....	63,000	44,650
Kettleman Hills	.....	.....	57,700	59,900
Wilmington	.....	.....	84,200	82,900
Others	.....	.....	264,900	274,550
Total California	588,400	605,000*	633,100	626,800
OKLAHOMA—				
Oklahoma City	.....	.....	103,525	95,000
Seminole Area	.....	.....	88,525	85,800
Fitts	.....	.....	32,225	31,475
Others	.....	.....	202,650	208,675
Total Oklahoma	499,700	428,000	426,925	420,950
LOUISIANA—				
North Louisiana	.....	.....	69,025	74,450
South Louisiana	.....	.....	191,600	190,400
Total Louisiana	241,900	251,340	260,625	264,850

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Jan.)	State Allowable in Jan.	BARRELS DAILY FOR WEEK ENDED Jan. 21	Jan. 14
KANSAS—				
Burrton-Haven	.....	.....	8,525	8,625
Russell County	.....	.....	21,475	22,675
Silica	.....	.....	11,200	9,750
Others	.....	.....	114,000	111,300
Total Kansas	153,900	153,900	155,200	152,350
NEW MEXICO	95,800	100,800	97,900	98,600
MICHIGAN	47,400	.....	51,500	46,200
ARKANSAS	49,000	.....	50,825	50,950
MOUNTAIN STATES—				
Wyoming	66,800	.....	48,100	48,600
Montana	11,900	.....	14,200	13,450
Colorado	3,900	.....	4,150	4,050
Total Mountain States	82,600	.....	66,450	66,100
EASTERN STATES—				
Pennsylvania Grade	.....	.....	69,700	68,900
Southern Illinois (New Pools)	.....	.....	124,000	127,400
Illinois-Indiana (Old Pools)	.....	.....	12,700	13,650
Others, Eastern	.....	.....	24,100	23,850
Total Eastern States	179,000	.....	230,500	233,800
Total United States	3,270,600	.....	3,253,425	3,255,565

† Daily average, considering Saturday and Sunday shut-downs.

* Recommendation of Central Committee of California Oil Producers.

WEEK'S DRILLING HIGHLIGHTS

South Louisiana

Proving of the Eola prospect resulted in the first 1939 discovery for Louisiana Gulf Coast, and also in the first field for Avoyelles Parish. Besides the well is the first in the region to produce from the Wilcox formation, and is the first to be perforated with as many as 672 shots. A widespread campaign along the Sparta-Wilcox trend is anticipated as a result of the strike.

Michigan

An important discovery in Western Michigan was indicated when a Kent County wildcat began filling with oil from the Traverse limestone. A major wildcatting campaign southeast through Ottawa, Kent, Barry, Calhoun and Ionia counties may result.

Major development in Central Michigan last week was a 1¼-mile north extension to the 1938-opened Wise pool in Isabella County.

An Eastern Michigan wildcat was testing saturated Monroe limestone, and appeared promising.

West Texas

The pay section in the Seminole field, Gaines County, was found to be thicker and more prolific than heretofore considered. This development, which greatly enhances the 12-well 4500-acre area, was proven last week by two wells.

Schleicher County developed the largest sweet gasser currently producing in West Texas, when a well in the Page deep field gauged nearly 30,000,000 cubic feet.

Kansas

A new field one mile north of the Fairfield pool and a mile east of the Coralena area in Russell County was assured by completion of a Kansas City lime well good for 837 barrels.

The Gorham field, Russell County, was enlarged a mile to the north and a fourth mile west. The producing formation was the Gorham sand.

Swabbing tests indicated a northeast extension for the Ellinwood field, Barton County, and it now lacks but three-quarters of a mile of connecting Silica.

North Texas

Northeast of Bonita field in Montague County three miles a wildcat filled 1900 feet with oil to indicate a new field. Archer County got a shallow pool when a test pumped 58 barrels of oil in 12 hours. A Grayson County wildcat pumped 10 barrels from 840 feet.

Southwest Texas

Riverside, hitherto only a gas producing area of Nueces County, got oil in the 5000-foot sand in a 4650-foot west extension. LaGloria field of Jim Wells County reported a completion northeast of the townsite and another assured of distillate production southwest thereof. The 6300-foot pay of La Rosa, Refugio County, got a 3000-foot north extension. Northwest Duval County chalked up a new Mirando sand at 1297 feet, and Live Oak County got a new Government Wells sand field at 1397 feet. Vicksburg distillate production at 4200 feet extended Starr County's Rincon field two miles north.

Illinois

Commercial production is indicated in a wildcat in Stanford Township of Clay County which showed in McClosky at 3084 feet. In Coles County a wildcat 40 miles north of important production looks like a 125-barrel well from Weiler formation.

Indiana

Electric logging indicated 15 feet of Jett and 10 of McClosky formation saturation in a wildcat in Spencer County. An outpost of Heusler Dome got water when given a nitro shot, but the Waltersburg sand saturation will be tested again.

New Mexico

The second oil producer and a possible failure on offset locations were added to the Lovington field, Lea County's new oil and gas area.

Comparison of Permits Granted for New Wells

STATE	Week Ending Jan. 21	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	3	14	14	16	247
California	20	72	72	125	1,146
Louisiana	10	52	52	87	1,214
Kansas	23	93	93	126	1,453
Michigan	10	53	53	43	953
Oklahoma	46	114	114	126	1,978
Texas	229	481	481	809	12,369
Total	341	879	879	1,332	19,360

Summary of Wells Completed in the United States

Week Ending January 21, 1939

	Completions	Oil Wells	Gas Wells	Failures	Footage Drilled	Total, 1939	Total this Date, 1938
Alabama	....	....	....	....	.....	....	.....
Arkansas	7	7	....	....	52,636	24	19
California	22	21	....	1	154,382	76	70
Colorado	....	....	....	....	.....	....	2
Florida	....	....	....	....	.....	....	.....
Illinois	42	30	1	11	69,892	179	73
Indiana	5	2	1	2	4,844	11	6
Kansas	20	14	....	6	55,174	79	160
Kentucky	8	4	2	2	12,555	61	56
Louisiana	14	8	....	6	93,369	60	95
Michigan	24	9	....	15	50,311	74	60
Mississippi	....	....	....	....	.....	....	2
Montana	1	....	....	1	1,845	3	4
Nebraska	....	....	....	....	.....	....	.....
New Mexico	8	8	....	....	34,940	49	38
New York	*27	24	2	1	37,800	*36	*42
Ohio	12	4	4	4	18,487	53	80
Oklahoma	39	23	4	12	100,536	134	155
Pennsylvania	*24	21	1	2	33,146	*94	*135
Texas	143	106	9	28	516,992	630	911
Utah	....	....	....	....	.....	....	.....
West Virginia	12	1	6	5	24,539	40	74
Wyoming	....	....	....	....	.....	18	6
Total this week	408	282	30	96	1,261,448	1,621	1,988
Total last week	405	276	27	102	1,287,871	....	.....
Total this year	1,621	1,110	120	391	5,074,705	....	.....

* Includes water-intake and pressure wells.

Oklahoma Fields

Payne County's Coyle pool gets double extension. Eastward extension looms for Noble area field.

Tulsa. — The Coyle pool, Payne County, a discovery of 1938, had its first extensions with completion of two offset wells. Minnich 1, C E½ NW NW 12-17n-1e of The Texas Company, made potential of 780 barrels from First Wilcox sand, total depth 4962 feet. This well is a west offset to the discovery well, Longan 1, C W½ NW NW 12-17n-1w, which has been producing from first Wilcox sand since November, 1938. It drilled into the formation in May but development of the area was delayed while 20-acre spacing was assured. The other well for the field is that of Stanolind Oil & Gas Company and Amerada Petroleum Corporation, Fruin 1, C E½ SW NW 12-17n-1e, is testing at 4922 feet. It is making 200 barrels daily previous to completion. One dry hole has been drilled, a north offset to the first producer.

Two offsets are still testing at Hillsdale field, Garfield County, another 1938 discovery. Champlin Refining Company will deepen Mackey 1, NW NW SE 4-24n-8w, south offset to the discovery. For more than a week it made in excess of 100 barrels daily from 7797 feet. Gas lift was used in some of these tests. It is coring deeper into the Second Wilcox sand. The other offset will be tested in the first Wilcox sand after casing has set. It had a show in this formation at 6617 feet.

Early testing for possible eastward extension of the Noble area, another 1938 discovery with only one well producing, should come shortly. Burke-Greis Oil Company had top of the Hunton lime at 6890 feet in Albert 1, SE SW NW 19-7n-1w, a mile east of the discovery well. Circulation was lost for a few days but the tools were started again late last week.

The only other Cleveland County test now active, Taylor 1, SE NE NW 23-8n-2w, is plugging back and will drill by 450 feet of drill pipe. The hole was at 7979 feet when tools were lost.

Only one well was left drilling in the Fox-Milroy deep development last week. Gulf Oil Corporation abandoned Garrett 8, C NW SW 27-2s-3w, after perforating upper beds without success. This hole was drilled to 8315 feet, deepest in the area, where Oolitic lime was unproductive. The one well now active is another Gulf Oil Corporation test, Empire-Franklin 1, C SE SE 27-2s-3w, now below 7900 feet. Magnolia Petroleum Company is still striving for steady production from the last producer of the area, Hefner-Mills 1, C SW NE 27-2s-3w, producing from 7996 feet. Water encroachment and failure to flow steadily are the combination to be overcome. A recent output for 24 hours was 310 barrels of oil and 400 barrels of water. A treating plant is being installed.

The St. Louis field, Pottawatomie County, a unit of the Greater Seminole area, came back into the lead as the most active spot in Oklahoma last week. A check of field reports showed 16 wells drilling in this old area.

An outpost wildcat for western Oklahoma was started by J. E. Elliott, Teton 1, SE NE 35-20n-25w. This is near the Texas Panhandle line. A block of 200,000 acres exists in the area and three other test are contemplated.

OKLAHOMA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Beckham	1	0	1	0	3,251
Cleveland	1	0	0	1	7,675
Creek	4	2	1	1	6,738
Garfield	1	1	0	0	6,702
Hughes	1	1	0	0	1,195
Lincoln	3	3	0	0	9,009
Muskogee	1	0	0	1	645
Okmulgee	5	3	0	2	8,261
Osage	1	0	0	1	2,413
Pawnee	2	1	0	1	3,784
Pittsburg	2	0	0	2	1,943
Pontotoc	1	0	0	1	945
Pottawatomie	10	10	0	0	39,661
Seminole	2	0	1	1	4,280
Stephens	3	2	1	0	2,379
Tulsa	1	0	0	1	1,655
Total	39	23	4	12	100,536

Four other Oklahoma wildcats to draw work orders during the week were well within the boundaries of previous production.

Indian Territory Illuminating Oil Company will drill in northern Okfuskee County, Palmer 1, NE SE NW 5-10n-9e, a mile north of the Olympic pool. Its petition for 10-acre spacing was not opposed when evidence was submitted to the Oklahoma Corporation Commission. The well will seek the Olympic sand, found productive in the Olympic pool in 1935. The field now has 351 producing wells.

In Pottawatomie County, Conley Drilling Company staked location for Duperou 1, NW NW SE 18-6n-5e. This will be a Wilcox sand test with higher formations to be cored. This test in the Greater Seminole area is between the St. Louis pool development and the smaller Gray pool.

The Southern Oklahoma area had two wildcats to start. In Murray County, Amon G. Carter, Fort Worth publisher and oil producer, was rigging up for Vinsonite 1, C NE SE 35-1s-2e. This test is not near oil production. A Comanche County wildcat ready for drilling is that of E. V. Parsons and associates, whose Laging 1, C NE SW 30-5n-9w, is on acreage assembled by Coline Oil Company. It is between the Cement pool, Caddo County and the development around Lawton, Comanche County.

Only one of the outpost wildcats in Western Oklahoma is drilling. This is the Kingfisher County test of Trigg, Carr and Gutowsky, whose Lankard 1, NE SE 34-17n-6w, is drilling below 4700 feet. To the southwest Continental Oil Company is still underreaming to set casing in Proctor 1, C NW NW 28-10n-20, where 9-inch casing will be set at 10,195 feet as soon as the hole is in proper condition. Size of the casing string plus the fact that the test is still in beds of upper Pennsylvanian age, suggests the possibility of this well establishing a depth record for Oklahoma. The Grady County wildcat in the heart of the Chickasha gas field, a joint test of more than 20 holders of gas producing acreage, is standing at 6618 feet with casing cemented at 6602 feet. Drilling is due to resume shortly. The well is being drilled by Carter Oil Company.

One outpost wildcat went into the failure stage during the week as Phillips Petroleum Company abandoned its Hughes County test, Mandler 1, SE SW NW 1-6n-10e. It was carried to 6151 feet in the Arbuckle formation. This company was below 2000 feet in its Pittsburg County wildcat, Hubacher 1, C NW NE 11-7n-15e, after setting 340 feet of surface pipe. Previously this test reached 450 feet but a new hole was started when the first was found crooked.

A Southern Oklahoma wildcat now at a depth to demand attention is the Carter County test of Pure Oil Company, Noble 1, C NE SE 17-1n-2e, north of Ardmore. It is now below 4500 feet. This test has good structural conditions indicated from surface studies as well as geophysical prospecting.

Northwest of the Doyle pool, Stephens County, Phillips Petroleum Company is below 4000 feet in Culbertson 1, NWc NE 4-1n-5w.

North Mid-Continent scouts are to meet

Scouts of the Northern Mid-Continent are holding a meeting at Enid, Oklahoma, January 27. Milton Barrett, Jr., Ohio Oil Company, scout, will have charge of the gathering. Two speakers have been engaged for the session. They are: H. M. Stalcup, vice president in charge of production, Skelly Oil Company, Tulsa; and Ira Cram, chief scout for Pure Oil Company in Tulsa. Stalcup will outline progress made in the science of production practices during the past 10 years. Cram will discuss the geology of Oklahoma, giving a bird's-eye view of structural conditions and stratigraphy.

Arbitration continues in Mid-Continent strike

Efforts to bring arbitration into the labor controversy between the Mid-Continent Petroleum Corporation and 600 striking employees were working from two sources at the end of last week.

J. L. Cooper, conciliator of the United States Department of Labor, held conferences with labor leaders and with officials of the concern. In Oklahoma City the new state board of arbitration and conciliation sent letters to each faction asking that issues at stake be submitted to arbitration.

Meanwhile another pipe line leading to the West Tulsa refining plant was broken by dynamite explosion January 18. Otherwise the strike has been without violence for more than 10 days.

Last week the corporation was granted injunction by the district court through which strikers are ordered to keep off company property. Labor leaders admitted last week that all properties were being operated at capacity.

The strikers made a move during the week to get state unemployment compensation, especially those who hold letters of dismissal.

Indian lease sale

Muskogee, Okla.—Auction sale of oil leases of the Five Civilized Tribes will be held at the office here January 24. The offering will consist of 47 tracts in the following counties: Rogers, Tulsa, Creek, Okmulgee, Okfuskee, Hughes, Seminole, Pittsburg, Pontotoc, Garvin, Carter and Bryan.

Kansas Field Developments

North Fairfield is new pool for Russell County. Gorham and Ellinwood fields get extensions.

Wichita.—One new oil field in Russell County, and substantial extensions for the Gorham pool, Russell County, and the Ellinwood field, Barton County, were the outstanding developments for Kansas last week.

The new field, North Fairfield, was assured by completion of Meharg 1, SEc 16-15-13w, Russell County. Earl Wakefield and associates drilled the well into the Kansas City lime. Total depth was 3112 feet. After acid treatment it established potential of 837 barrels. The well is a mile north of the Fairfield pool and a mile southeast of the Coralena pool.

One of the extensions was in Russell County. Central Petroleum Company had 2300 feet of oil in the hole in Mills 1, SWc 34-13-15w, with only 2 feet of the Gorham sand penetrated at 3317 feet. The well is a mile north of previous production and a fourth of a mile west of production. The formation is that productive in the field.

The northeast extension for the Ellinwood field was indicated by swabbing tests in Panning 14, Stanolind Oil & Gas Company, NE SW SE 10-20-11w. At 3283 feet in Arbuckle lime oil rose 3000 feet in the hole. It was swabbed several days. Potential test will be made soon. This well will extend production of the Ellinwood field across the Arkansas river and push productive limits to within three-fourths of a mile of the Silica field, both in Barton County.

A showing was recorded in a Barton wildcat well of Amerada Petroleum Corporation, Druckenberger 1, C NE NE 14-19-15w. It had saturation between 3580 and 3505 feet in Arbuckle lime, top 3572 feet. Casing was set at top of the lime for further testing. It is between the Albert and Heizer pools.

Production tests are due in a McPherson County wildcat, which may open a new pool in the Mississippi chat. Marlyn Oil Company had top of the chat at 2986 feet and drilled to 3019 feet in Dixon 1, NE NW 7-19-2w. It swabbed small amounts of oil. Acid will be used before testing for commercial production.

A third well for the Derby gas pool, Sedgwick County, was completed by Lauck Petroleum Company, Goodacre 1, NW NW SE 32-28-2e, from Stalnaker sand, 2195 to 2221 feet. It made 26,000,000 cubic feet.

A second well for the Leesburg pool, Stafford County, looked promising. Continental Oil Company, in McCune 1, SW NE 12-25-13w, pumped 100 barrels of oil from Arbuckle lime, total depth 4090 feet. Acid treatment will be completed before potential test is taken.

The second well was completed for the Wenke pool, Rice County, by D. R. Lauck, whose Berscheidt 1, NW SW 18-20-10w, made potential of 380 barrels from the Arbuckle lime, total depth 3992 feet.

Kansas activity shows 23 new tests

Wichita.—Field activity in Kansas last week summed up to 23 wells started and 20 completed. In the completions were 14 producing wells with combined initial output of 15,067 barrels, and 6 dry holes. By counties the new locations were: Barton 2, Butler, 3; Cowley, 1; Ellis, 3; Greenwood, 2; Kingman, 1; Rice, 1; Russell, 5; Sedgwick, 1; Stafford, 2, and Stevens, 2.

KANSAS COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Barton	1	1	0	0	3,138
Cowley	1	0	0	1	3,041
Ellsworth	4	4	0	0	12,668
McPherson	2	1	0	1	5,997
Rice	2	2	0	0	6,404
Rooks	1	0	0	1	3,424
Russell	5	4	0	1	12,700
Stafford	3	2	0	1	6,277
Woodson	1	0	0	1	1,525
Total	20	14	0	6	55,174

Illinois Developments

Clay County wildcat described as commercial well. Predict wildcat 40 miles from field will produce.

Olney, Ill.—Thompson Drilling Company's Waddell 1, SE SE SE 29-3n-7e, Stanford Township, Clay County, was given a 5000-gallon acid treatment and, pending a production test, was described as a commercial well. The wildcat was bottomed at 3084 feet. Production is from the McClosky lime.

The rig was moved south to SW NW 21-2n-7e, Keith Township, Wayne County, to drill John W. Sanders' Briscoe 1, a wildcat on a 500-acre block.

Completion of R. F. Whalen's W. W. Michael 1, SWc NW 1-11n-7e, south of Mattoon in Coles County and 40 miles north of any other important production, was delayed when a nitro shot brought water in the hole. It was recemented. Operators predicted the test, if successful in shutting off water, would produce about 125 barrels daily. It swabbed oil from the Weiler formation at 1877 feet before the shot. In the same county, Kingwood Oil Company's Tivenen 1, north of Mattoon, was coring below 2400 feet.

Assurance that a deep well drilling campaign will feature at least the Sandoval section of Marion County this summer came when Max Pray's J. Langenfeld 1, NW SW NW 4-2n-1e, recovered a 25-foot saturated Niagaran lime core. It promises the second producing well from that formation in the area. Total depth is 3165 feet, 239 feet lower than the discovery.

Longhorn Oil Corporation's Mrs. J. M. Helm 1, SE NW 1-3s-14w, 1½ miles northeast of Grayville, Wabash County, was shut down for repairs at 1115 feet. This wildcat is closely watched, being 4 miles east and across the Wabash River from the Cooper pool opener in Gibson County, Indiana. Mrs. Helm is social secretary to Mrs. Eleanor Roosevelt, and the wife of the president visited the farm on several occasions.

ILLINOIS COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Clark	1	0	0	1	475
Clay	3	3	0	0	9,217
Edgar	1	0	0	1	670
*Fayette	21	14	1	4	30,372
Marion	14	13	0	1	25,878
Shelby	1	0	0	1	1,677
Wabash	1	0	0	1	1,603
Total	42	30	1	9	69,892

*Two input wells among Fayette County completions.

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Kentucky

Birck City test makes large Jett gas well

Owensboro, Ky.—Hupp et al's O. L. Boswell 1, in the Henderson County section of the Birk City pool, was completed last week as a 2,650,000 cubic foot gasser in the Jett sand at 1220 feet. One of the largest gas wells drilled in the section, operators decided against going to the Cunningham sand where oil production was expected.

Major Oil Company is following a completion procedure new to this section at its Carrie Long 2 in the north end of the Birk City pool. With aluminum sections in the well casing opposite the Jett sand at 1240 feet, the Jones sand at 1400 feet and the McClosky lime at 1840 feet, an attempt will be made to gain production from each level. The aluminum sections will be cut away and each formation treated separately. The well will be pumped from the bottom.

This company recovered a 17-foot saturated McClosky core from its Federal Land Bank 1 in the Birk City area. Jim Ellis et al's K. A. Jones 2 drilled out a cement plug without receiving a McClosky flow and are deepening in that formation. A quarter mile southeast of the K. A. Jones 1, a gasser, the No. 2 would extend the crude area 1 mile southwest if commercially completed in the McClosky. It passed through a Bethel sand saturation at 1700 feet, giving additional indication that a sand pool exists over at least part of the Birk City McClosky lime pool.

A wildcat test in the Scuffletown section of Henderson County, W. H. Parks et al's O. G. Letcher 1, was drilling past the 1300-foot mark, expecting to reach the McClosky level late in the week. The test is on a 518-acre tract, operators reporting that formations have been running about like those in the Birk City pool. Palmer Drilling Company has the drilling contract.

In the Spottsville pool of Henderson County, numbering two flowing wells and one light pumper, two tests were started last week: Magnolia Petroleum Company's Annie Green 2 is being drilled by Parker Drilling Company with rotary tools. It offsets the two flowing wells, the Sam Green discovery and the Annie Green 1. Maurice T. Grubb et al's T. Cooksey 1 was started on Highway 60, about 7 miles east of Henderson. Jack Fitzpatrick and Granville Hayes are the drilling contractors for the latter test.

Aiso in the Spottsville section, the Annie Stewart Ferry 1 resumed drilling from 1012 feet after being shut down for several weeks. A shift of drilling contractors occurred in the interval, and Clark Drilling Company is now doing the work. It was at 1700 feet at last report. Standard cable tools were being erected by Parker Drilling Company over Magnolia Petroleum Company's J. E. Casey 1, which found the McClosky dry after drilling to 2200 feet with rotary. It is to be carried to the Devonian lime, expected at about 4000 feet.

KENTUCKY COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Butler	2	1	0	1	1,145
Daviess	2	1	0	1	3,251
Floyd	1	0	1	0	2,754
Lee	1	0	1	0	3,245
McLean	1	1	0	0	1,450
Powell	1	1	0	0	710
Total	8	4	2	2	12,555

Arkansas cement plant gets Cotton Valley gas

Louisiana-Nevada Transit Company, headed by Gus Delaney of Ada, Oklahoma, has completed negotiations for the laying of 75 miles of 8⅝-inch gas line from the Cotton Valley, Louisiana, field, Webster Parish, to the plant of Arkansas Portland Cement Company at Okay, Howard County, Arkansas. Announcement of consummation of the negotiations was made by J. F. Kauffman, Okay plant superintendent. The line will handle ten million cubic feet of gas daily at first, serving several small towns along its route. Connections at Cotton Valley have been contracted for with Oliphant Oil Company of Shreveport.

Eastern States

PENNSYLVANIA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Allegheny	1	0	0	1	1,209
Beaver	1	0	0	1	989
Greene	1	0	1	0	2,967
Washington	1	1	0	0	981
Bradford	16	16	0	0	....
Bradford*	2	2	0	0	....
Middle District	1	1	0	0	....
Butler-Armstrong	1	1	0	0	....
Total	24	21	1	2	6,146

*Water (pressure) wells.

NEW YORK COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Allegany	26	24	2	0	41,008
Allegany*	7	7	0	0	8,986
Steuben	2	0	2	0	9,098
New York-Pennsylvania Gas	1	0	0	1	....
Total	36	31	4	1	59,092

*Water (pressure) wells.

WEST VIRGINIA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Calhoun	1	0	1	0	1,905
Clay	2	0	0	2	5,162
Gilmer	2	0	2	0	3,158
Kanawha	1	0	1	0	5,009
Ritchie	2	0	2	0	3,408
Roane	2	1	0	1	4,488
Tyler	2	0	0	2	1,409
Total	12	1	6	5	24,539

OHIO COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Athens	3	0	2	1	2,291
Jefferson	1	1	0	0	1,580
Knox	1	1	0	0	770
Lawrence	1	0	1	0	2,917
Meigs	2	0	1	1	2,030
Morgan	1	1	0	0	1,290
Muskingum	1	0	0	1	3,838
Washington	1	0	0	1	498
Wayne	1	1	0	0	3,273
Total	12	4	4	4	18,487

Indiana

Johnson wildcat to core deeper into Niagara

Evansville, Ind.—The weather replaced wildcat tests as principal discussion topic among oil men in southern Indiana last week as rain and snows followed by above-freezing weather made fields in many sections impassable and turned dirt roads into mud bogs.

Parshall-Graham Oil Company's M. Simpson 1, SW NE NW 23-1n-10w, Johnson Township, Knox County, believed to be on the top of the Niagara lime instead of in the formation, is to be cored an additional 40 or 50 feet. The well had stopped drilling a week ago at 3399 feet, making it the deepest hole drilled in the Hoosier state. Operators proclaim it capable of commercial production at its present depth, an electric test having revealed 27 feet of saturation in lower lime horizons, but plan to administer a 5000-gallon acid treatment after carrying the hole deeper. Several saturated sands have been passed through by the wildcat, at least one of them believed capable of providing a good well.

To Test McClosky

L. L. Le Moine & J. Ervin Taylor et al's Prudential Life Insurance Company 1, NE SW NW 7-7s-7w, Spencer County, set casing at 1785 feet in the McClosky. An electric test run on the wildcat checked with the drilling log and showed 15 feet of Jett sand saturation and 10 feet of McClosky saturation. It was to be drilled in late last week.

Water entered the hole at B. Bond's Fred J. and Ida Keck 1, SW NE SW 6-7s-11w, 1 mile east of production in Sun Oil Company's Heusler Dome pool of Posey County, following a nitro shot. The outpost, in Vanderburgh County, was re-cemented above the Waltersburg sand where a 16-foot saturated core was obtained and will be re-drilled in this week. Sun Oil Company's E. J. Schroeder 2, NE NE SE 1-7s-12w, Marrs Township, Posey County, in this same area, had insufficient Saltersburg sand saturation at 1848 feet and is deepening. The Jett sand was topped at 1900 feet. Sun Oil Company has ten producing wells in this pool, yielding an average of 50 barrels daily.

Ansel Douglas et al's Stocking (Schumacher 1), Section 26-6-6, Spencer County, was started last week and had surface casing set. Another new wildcat start was C. D. Neff's O. Deeg 1, 2 miles south of Hatfield, Spencer County, which had surface casing set at 153 feet. Several majors hold leases in the vicinity of the latter test.

INDIANA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Orange	1	0	0	1	550
Pike	2	0	1	1	1,699
Posey	1	1	0	0	1,813
Spencer	1	1	0	0	782
Total	5	2	1	2	4,844

North Texas Fields

Test northeast of Bonita fills 1900 feet with oil.

New shallow oil pool established in Archer County.

Wichita Falls, Texas. — Montague County gave promise of registering its second oil strike for the new year when Benton and Holmes' Joe Bowers 1, SEc Section 55, M.E.P.&P. Survey, 3 miles northeast of Bonita, filled 1900 feet with oil in 12 hours after drilling cement plugs at 2898 feet. The well was swabbing 20 barrels of pipe line oil hourly, according to late reports.

Saturated sand, with shale streaks, was topped at 2887 feet, and 7-inch pipe was cemented at 2883 feet. This horion has been tentatively identified as the Canyon. The prospect is 2½ miles southwest of the Beck pool, which produces from several shallower zones. Continental Oil Company and Petroleum Producers Company, owners of nearby acreage, contributed dry hole money towards the drilling of Bowers 1.

Cree and Hoover established a new shallow pool in Archer County when their J. H. Turbeville 1, near center SE¼ Section 157, Robert Carson Survey, pumped 58 barrels oil and 12 barrels water the first 24 hours from sand at 1491-94 feet. The well pumped 54 barrels oil and 7 barrels water on the second day. It was drilled to 1507 feet then plugged back to 1494 feet.

C. E. Marshall et al's F. Chistman 1, near southwest corner of the N. L. Ahalt Survey, Grayson County wildcat, was rated as a 10 barrel pumper after plugging back from 927 feet for completion in sand at 832-40 feet. It is 9 miles northwest of Denison.

The Ellenberger oil pool uncovered in western Cooke County and 2 miles south af the Muenster townsite area late in December was defined partially to the southeast when Joe Beard et al's B. Voth 1 shut down at 1855 feet after missing the oil zone. An oil show was logged above the Ellenberger at 1589-1601 feet, and will be tested. Whitfield, Pearson & Grimes' B. Voth 2, oil discovery, is installing pumping unit after failing to maintain its flow from lime at 1788-93 feet. In the Muenster townsite pool, Grayburg Oil Company's Ben Luke 6, originally completed at 1625 feet, deepened to Ellenberger, topped at 1753 feet, and encountered sulphur water at 1781-97 feet.

Louis Sikes et al's Walter Ford 1, northeastern Archer County wildcat that has been showing for a producer in lower Strawn since the forepart of December, swabbed 21 barrels of oil and acid residue per hour after using 10,000 gallons of acid. The hole was plugged back from water at 4430-37 feet to 4430 feet, then gun-perforated casing at 4375-4400 feet and 4404-16 feet.

Two previously abandoned Strawn tests drilled since K-M-A occupied the snotlight in North Texas were slated for additional operations. Burk Royalty Company et al's J. B. Miller 1, Section 20, A.T.N.C.L. Survey, 2 miles southwest of the Hull-Silk field, Archer County, is moving in rotary to deepen from 4006 to 4500 feet to try for production in the lower Strawn. Phillips Petroleum Company has pooled acreage with the above concern to make the test. Fain-McGaha Oil Corporation and Stanolind Oil & Gas Company's Dahse-Logan 1, NWc Block 18, I. Holeman Survey, A-130, northwestern Young County and near the Archer County line, is preparing to cleanout and make an electrical formation survey. This failure was completed last June at 5090 feet, logging shows in the shallow zones that produce on adjacent tracts, and saturation in the Strawn at 4504-09 feet. The hole was mudded and cap welded on 10-inch surface string. Recently oil and gas leaks developed around the casing plug. Owners cut a ¾-inch opening that was followed by a brief flow of pipe line oil. Survey of the hole will serve to locate the source of the oil.

NORTH TEXAS COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Archer:					
Miscellaneous	1	.	.	1	1,406
Clay	2	2	.	.	1,529
Cooke	1	1	.	.	839
Foard: Wildcat	1	.	.	1	5,005
Grayson:					
Wildcat	1	.	.	1	2,512
Jack:					
Miscellaneous	1	1	.	.	2,805
Wildcat	1	.	.	1	5,060
Montague:					
Wildcat	1	1	.	.	4,656
Throckmorton	3	2	.	1	1,122
Wichita:					
K-M-A	4	3	.	1	15,670
Miscellaneous	3	.	.	3	3,287
Young:					
Miscellaneous	2	2	.	.	4,572
Wildcat	1	.	1	.	2,518
Total	22	12	1	9	50,981

Another shallow strike for Jones County

Abilene, Texas.—Another shallow oil strike for southeastern Jones County was indicated last mid-week when J. H. Sprouls et al's John Nichols 1, near northwest corner of the east 215 acres of T&P, Section 47, Block 16, filled 400 feet with oil from Tannehill sand at 1779-82 feet. Bailing test indicated a commercial pumper. This wildcat is two miles east of the south end of the Condor-Sayles pool, which produces from the Cook sand at 1900 feet.

D. H. Bolin et al's Morrison 1, southwest offset to the discovery producer of the Akard pool, near center of south line of Jones County, missed the oil horizon and found hole full of water at 2303-10 feet. The test was deepened to 2330 feet then shut down.

Hedrick Oil Company's Morrison 1, west offset to the discovery, found the pay section normal in developing hole full of oil at 2148-50 feet.

Expansion of the Griffin pool, Avoca Townsite area, several locations to the north occurred when Ungren, Frazier et al's Hamilton & Cox 1, swabbed 175 barrels initial after using 1000 gallons of acid in saturated section at 3254-62 feet and 3263-73 feet. Two offsets have been started.

Bert Fields et al's Taylor 1, location east of production, made a peak flow of 84 barrels of oil hourly on brief gauge from pay at 3209-33 feet. This pool is the second for Jones County to produce from the Palo Pinto lime, and production will embrace a large portion of the townsite.

Humble Oil & Refining Company's Bickley 1, deepened producer in the Noodle Creek field, first strike for Jones County, flowed by heads at rate of 75 barrels daily from Swastika at 3107-16 feet after plugging off water at 3118-32 feet. It was originally completed in 1929 at 2481 feet.

East Texas Fields

Cayuga outpost gets gas production

Tyler.—Gas production estimated at 2,000,000 feet daily was developed by Barnsdall Oil Company's Tubbs 2, mile east extension for the deep gas-distillate horizon in the Cuyaga field, following treatment of porous zone in lower Glen Rose at 7524-62 feet with 3000 gallons of acid. The hole is bottomed at 7614 feet, and will be re-acidized.

Tide Water Associated Oil Company et al's McGee 1, mile and quarter northwest outpost for the Opelika two-well deep pool, Henderson County, halted at 8212 feet to run electrical survey before running pipe to bottom to try for production in the lower Trinity. Favorable porosity in Coquina lime at 8136-67 feet is being counted upon to yield production. Gas shows were also logged in the lower Glen Rose.

Shreveport. — Houston Oil Company has taken an interest in Superior Oil Corporation's Long Bell 1, S. P. Railroad Survey No. 5, San Augustine County, Texas, wildcat now drilling below 5510 feet, and which will be taken to at least 6000 feet under present plans.

EAST TEXAS FIELD COMPLETIONS

Area	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Joiner	4	4	.	.	14,663
Kilgore	8	8	.	.	29,749
Longview	4	4	.	.	14,439
Total	16	16	.	.	57,856

EASTERN TEXAS COMPLETIONS
(Outside East Texas Field)

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Falls—					
Wildcat	1	.	.	1	330
Franklin—					
Talco	1	1	.	.	4,316
Houston—					
Navarro					
Crossing	1	1	.	.	5,879
Titus—					
Talco	1	.	.	1	850
Van Zandt —					
Wildcat	1	.	.	1	4,292
Total	5	2	.	3	15,667

West Texas Fields

Seminole pay proved thicker and more prolific. Schleicher develops large sweet gas production.

Midland, Texas.—Deeper penetration of the Permian saturated zone by two tests in the Seminole field, Gaines County, established the pay section as being thicker and more productive than heretofore considered. This development enhances greatly the oil production possibilities of the large structure, which was proved for oil in November, 1936. Two completions the past week gives the field a total of 12 flowing wells, with approximately 4500 acres classed as proved. Development has been curtailed because the area is isolated from pipe line and railroad facilities. The production is marketed in tank trucks, with the well owners paying 25 cents per barrel for drayage.

The presence of the more productive and thicker pay was revealed by the deepening of Magnolia Petroleum Company and Atlantic Refining Company's H. & J. 1, C SW SW Section 219, a northeast offset to the discovery. Originally completed in broken saturation at 5033-85 feet, with an elevation of 3352 feet, this well developed high gas/oil ratio, and was deepened to 5104 feet. Liner was cemented on bottom, then perforated with 24 shots at 5095-5102 feet, opposite the best porosity. The well swabbed 13 barrels natural hourly, then responded to treatment with 1000 gallons of acid by flowing 815 barrels of 33 gravity oil initial through 1-inch choke, with gas/oil ratio of 1042/1.

Amerada Petroleum Corporation's Riley 2, northwest offset to the discovery, passed up the original oil and gas pay level in cementing 5½-inch pipe at 5152 feet. The main oil horizon was logged at 5167-5224 feet, giving the well a sub-sea depth of 1903 feet, and on 12-hour gauge with 3-inch drill pipe in the hole the natural flow amounted to 425 barrels of pipe line oil, testing 34.6 gravity. The gas/oil ratio was estimated at 632 feet per barrel. Future tests in the older section of the field will probably drill to this lower horizon and set pipe through the upper oil and gas zone to avoid excessive gas/oil ratios. Osage Drilling Company and Atlantic Refining Company's Tippett 1, C SE NE W. T. Section 266, west offset to the most northwesterly producer, logged saturation at 5060-5139 feet. The well flowed 88 barrels natural in 12 hours, then gauged 486 barrels of pipe line oil in 23¼ hours after using 1000 gallons of acid.

Schleicher County developed the largest sweet gasser currently producing in West Texas when the latest of the two wells in the Page deep pool deepened and used acid in the gas-distillate horizon. Cooper Gas Company's Bert Page 2, C NE SE GH&SA Section 40, Block L, used 2000 gallons of acid at 5495-5525 feet. Tubing packer was unseated, and the well produced during the first hour at the rate of 28,718,000 feet daily, then after blowing through casing and tubing for 7 hours gauged at the rate of 24,615,000 feet. On the latter test it was making 6 barrels of 60 degree gravity distillate hourly, with 370 pounds back pressure on the tubing, and 510 pounds casing pressure. Page 2 was originally completed last September from lime at 5441-5501 feet, with an elevation of 2289 feet, for 9,500,000 feet of wet gas initial. It was deepened early in January without a noticeable gas increase, but the distillate yield amounted to about 40 barrels daily. Lone Star Gas Company is drilling two nearby tests on acreage farmed out by Humble Oil & Refining Company to develop gas for its natural gas system at San Angelo.

Standard Oil Company of Texas' University 1-5, SW SW NW Section 5, Block 30, situated on the northwest edge of the Church & Fields extension area, Crane County, flowed 352 barrels initial after 750-quart nitro shot at 3139-3302 feet. The production declined sharply to small heads while cleaning out shot cavings to run tubing. Six completions in this sector have proved a large area for small pumping production. Six more tests are underway as operators believe a productive area will be found along the trend. Great Western Producers, Inc.'s University 1-B, SW SW NE Section 5, Block 30, is a new test, being on a quarter section farmed out by the Phillips Petroleum Company.

The drilling of an Ordovician test in the Masterson shallow pool, northern Pecos County, has been contracted by Anderson-Prichard Oil Corporation, Oklahoma City, to start up in March. Location has been tentatively assigned to the J. S. Masterson land, C S¼ of N¼ of H&GN Section 104, Block 10. A deep project has been under consideration for nearly two years. The Oklahoma concern acquired the deep rights on a large block, including full sections contributed by majors, and has been successful in selling lease spreads and obtaining dry hole donations to cover a substantial portion of the cost of a decisive test in the Ellenberger.

The elimination of another prospective producing horizon recorded by Gulf Oil Corporation's Swenson 1-B, northeastern Garza County wildcat, occurred when prolific yield of water was found near the 6200-foot level after gun-perforating casing opposite the saturated zone in the Pennsylvanian. These perforations have been cemented, and the hole cleaned out to 6857 feet preparatory to re-perforating near the 6780-foot level, where small show of oil with water followed a test at 6785-94 feet. When the latter water appeared the shot holes were plugged and testing operations shifted to the upper zone while waiting for the cement to set. This wildcat was drilled to 8104 feet, and gave promise of an oil well, with water, through perforations at 7327-34 feet on December 2.

Lease buying is still active along a northwest trend from the Garza County deep test, and is swinging westward across the sparsely explored plains country. Humble Oil & Refining Company is assembling a block in the southeast corner of Lamb County on the strength of a high found through extensive geophysical operations. Another company is reported to have assumed a deep test obligation in exercising its long standing option on a large block in Lamb County.

Prospects for deep production under the Wasson field, largest producing area in West Texas, were given consideration by the Amerada Petroleum Corporation in reserving mineral rights below 6000 feet in farming out the south half of its Clawater 480-acre lease, Section 766, Yoakum County. Dan Danvers et al were assigned the lease, and will carry the company for 3/16 over-riding royalty. Operators in this bi-county field are awaiting with interest the outcome of a deal that involves the acquisition by Aloco Oil Company of all proved and untested acreage held by The Texas Company in Yoakum County. Negotiations have been pending since mid-December, and if a trade is concluded the Aloco Oil Company will drill between 75 and 100 wells that will be served by a pipe line outlet to be provided by the company.

Sid Richardson et al's Keystone-Sun 1, SEc PSL Section 4, mile north extension for the Keystone field, Winkler County, flowed by heads at 150-barrel daily rate after 300-quart nitro shot at 3362-3482 feet after plugging back from 3547 feet to 3492 feet. Russell Conkling and associates propose to drill a wildcat to the northeast of the Keystone field, and location may be assigned to the NW¼ T&P Section 18, Block 46, T-1-N.

WEST TEXAS COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Andrews—					
Fuhrman	2	2	.	.	8,915
Cochran—					
Duggan	1	1	.	.	5,092
Crane—					
Jordan	1	1	.	.	3,716
McCamey	1	1	.	.	2,161
Ector—					
Foster	1	1	.	.	4,185
Goldsmith	1	1	.	.	4,246
Jordan	2	2	.	.	7,308
Howard	3	3	.	.	8,778
Mitchell—					
Wildcat	1	0	0	1	3,508
Pecos—					
Payton	2	2	0	0	4,169
Pecos Valley	2	2	0	0	3,032
Presidio—					
Wildcat	1	0	0	1	3,315
Upton—					
Gulf-McElroy	1	1	0	0	2,848
McCamey	2	2	0	0	4,865
Ward	4	4	0	0	9,217
Winkler—					
Emperor	1	1	0	0	2,995
Kermit	1	1	0	0	3,277
Keystone	1	1	0	0	3,355
Scarborough	2	2	0	0	6,038
Yoakum—					
Bennett	2	2	0	0	10,491
Total	32	30	0	2	101,511

TEXAS PANHANDLE COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Armstrong:					
Wildcat	1	.	.	1	420
Carson	1	.	1	.	3,080
Gray	2	2	.	.	6,035
Hutchinson	2	2	.	.	6,132
Moore	1	.	1	.	3,090
Total	7	4	2	1	18,757

Southwest Texas Fields

Riverside field is promised oil production.

Jackson zones produce in two Mirando spots.

Corpus Christi. — Riverside will become an oil field, the first for the new year in Nueces County, was the indication late in the week as Seaboard Oil Corporation of Delaware cored ahead preparatory to testing again in Ellen C. Wilson 2, 4650 feet west of a blowout on the same tract. The test cored a sand section with oil and gas showing from 4969-96 feet, and on a drill-stem test from 4985-96 feet recovered 250 feet of oil and oily mud in 10 minutes, 70 percent of which was oil. The test was through ¼-inch top and bottom chokes and showed a pressure of 400 pounds.

Following the discovery of the field through completion of a gasser in the same sand by Stanolind Oil & Gas Company, an active development program is under way. Two wildcats south of the pool are now drilling in an effort to further outline this apparently important discovery.

Union Producing Company is preparing to move the rig from its Minnie Brown 1, deepest test east of the Rocky Mountains, to the North Agua Dulce field, where it will drill Simmons 3. The Brown well, drilled to 13,728 feet, plugged back and is being finished in an upper sand.

In Jim Wells County, the La Gloria district again comes to fore with one well ready for completion. Shell Petroleum Corporation's C. F. H. Von Blucher 1, Best Survey No. 362-A, northeast of La Gloria, drilled to 7565 feet in sidetracked hole and set liner on bottom. The test had been carried to 7845 feet, but stuck drill pipe and had to back up to drill by the tools. It will test a sand between 7528-63 feet, which showed for a distillate producer. If this fails, it will complete in the 7300-foot zone, also indicated as a distillate horizon.

Magnolia Petroleum Company's Sam Maun 1, several miles southwest of La Gloria, was drilling ahead below 6575 feet and will be to the level where the Vicksburg is expected by the close of the new week. This test has had a number of distillate sands, but is drilling ahead in anticipation of production of crude oil at the lower levels.

San Patricio County's drilling boom still centers around the McCampbell field, where interest is in outposts to the west. Several tests are either drilling or planned for the immediate future in this sector of the already large pool.

Refugio County's La Rosa field apparently was extended 3000 feet farther north in the 6300-foot pay as Phillips Petroleum Company et al's Paveleck 1, NW Section 1, cored broken oil sand 6312-31 feet and went to 6525 feet. Casing has been set and perforations will be made in the lower sand.

SOUTH TEXAS COMPLETIONS
Corpus Christi District

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Aransas County—					
McCampbell	1	1	0	0	7,225
Brooks County—					
Kelsey (wc)	1	1	0	0	4,772
Calhoun County—					
Heyser	1	1	0	0	5,477
Hidalgo County—					
McAllen (wc)	1	1	0	0	7,507
Jackson County—					
Cordelle	1	1	0	0	2,573
Jim Wells County—					
Wildcats	1	0	0	1	5,810
Alice	2	1	0	1	11,482
Nueces County—					
Turkey Creek	1	1	0	0	4,053
Clara Driscoll	2	1	0	1	10,943
Saxet	1	1	0	0	4,780
Wildcats	1	0	0	1	7,510
Refugio County—					
La Rosa	1	1	0	0	6,343
San Patricio County—					
Wildcats	1	0	0	1	5,526
McCampbell	1	1	0	0	7,142
Victoria County—					
Heyser	1	1	0	0	5,491
Total	17	12	0	5	97,544

SOUTH TEXAS COMPLETIONS
Laredo District

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Duval County—					
Kohler (wc)	1	0	0	1	1,809
Hoffman	2	1	0	1	5,447
Piedre Lumbre	1	1	0	0	2,086
Lundell	3	0	3	0	4,606
Eagle Hill	1	1	0	0	2,562
Rancho Solo	1	1	0	0	1,886
Jim Hogg County—					
Kelsey (wc)	1	0	0	1	4,771
Lavaca County—					
Russek (wc)	1	0	0	1	225
McMullen County—					
Ezzell	3	3	0	0	4,528
Munson	2	2	0	0	2,437
Webb County—					
Wildcats	1	0	0	1	2,535
Cole-O'Hern	1	1	0	0	2,905
Zapata County—					
Haynes	1	1	0	0	1,197
Total	19	11	3	5	36,894

SOUTH TEXAS COMPLETIONS
San Antonio District

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Bastrop County—					
Wildcats	1	0	0	1	2,132
Riddle	1	1	0	0	1,733
Caldwell County—					
Luling	1	1	0	0	2,079
Total	3	2	0	1	5,944

Two new fields for Mirando district

Laredo.—Mirando district apparently had two new producing spots uncovered in the Jackson formation during the past week. One is in the Mirando sand and is near the northwest corner of Duval County, while the other indicates a new pool just south of Ezzell in Live Oak County.

Texas Inland Oil & Gas Company was completing Adami Brothers 1, Block 9, Section 47, after coring Mirando sand at 1289-97 feet. The well had a well-saturated core and pipe was landed at 1290 feet. Casing plugs had been drilled as the week closed and completion was expected shortly. This potential field discovery is on a block assembled by W. Earl Rowe.

The Adami prospect has been fairly well drilled, indicating possibilities of production. It is on the general trend with the Munson shallow field, which has uncovered considerable 1200-foot Mirando production.

This area's second strike of the week was Alvin Brauer, R. P. Holland and E. H. Smith's Bonham et al 1, in the northeast corner of Block 3009, Section 59, of the C. F. Simmons Farm Lots Subdivision, ¾ mile south of the present Ezzell field. This test found the Government Wells sand at 1390-97 feet, and on a drill-stem test recovered 150 feet of oil cut mud in 10 minutes. Casing was set immediately. The test, which has a derrick floor elevation of 215 feet, topped the Chernoskey sand at 1276 feet and showed a little oil then went to the Government Wells horizon, topped at 1390 feet.

The Bonham well is in the vicinity of two previously drilled tests, both of which showed oil and gas. It is down dip and on a structure parallel to the Ezzell field. The Ezzell area is productive in the Loma Novia sand, lying immediately below the Government Wells zone.

Francitas field ordered spaced 20 acres to well

Twenty-acre spacing for wells in the Francitas field, Jackson County, was provided in an order issued by the Texas Railroad Commission last week. This will allow wells to be drilled 466 feet from lease or boundary lines and 933 feet apart.

The allowable will be distributed on the basis of acreage and per well with 50 percent allocated on each factor. The regulations permit the assignment of as much as 35 acres to one well for proration purposes. In order to determine whether wells are capable of producing allowables assigned, potentials will be taken through ¼-inch positive choke 6 inches long.

Distillate well extends Rincon two miles north

Mission.—Davenport and Hoffer extended the Rincon field of Starr County, two miles to the north with the district's second distillate producer in the Vicksburg sand. Dallas Joint Stock Land Bank 1, in the southeast corner of Section 226, flowed 22 barrels of 58-gravity dark distillate in 10 hours along with an estimated 4,000,000 cubic feet of gas per day when completed through ¼-inch chokes. It showed a pressure of 1350 pounds on tubing.

The test had been drilled to 5025 feet, when an electric logging device indicated a series of sands; one being at 4282-95 feet, which corresponds to the discovery sand. Casing was landed at 4350 feet and perforations made at 4284-94 feet with 12 shots.

This well had been drilled originally to its contract depth by Transwestern Oil Company and D. D. Davenport. After the electric logging device had been run, Transwestern turned 1400 acres, including the well site, to Davenport and Hoffer, who completed the operation. The well, however, will receive a series of tests in upper sands before finally being placed on production. Other zones were indicated at 4202-20 feet, 4172-90 feet, 3935-60 feet and 2922-32 feet.

The completion of this distillate pro-

ducer brings rise to a possible development in the future by these operators and the ultimate construction of a gas recycling and gasoline plant.

Another development project now under way which is expected to bring about a distillate separation unit together with a recycling plant is the San Salvador area of Hidalgo County, where Pan American Production Corporation is drilling the first of a series of 7800-foot sands to the high-pressure horizon.

McCollum Exploration Company and associates are revising the lease set-up on the McAllen field block in Hidalgo County preparatory to development of this distillate reserve. The blocks are being divided into 1000-acre units, to receive one or more wells. It also is anticipated that this area will receive a recycling unit.

R. E. Harding's E. M. Card 1, Lot 8, Block 8, just east of McAllen townsite, and first producer in the 7400-foot sand in the field, has been completed for an estimated 100 barrels of crude oil per day along with 6,000,000 cubic feet of gas per day through 3/8-inch choke under a working pressure of 3100 pounds on tubing. The well had been carried to 7507 feet, tested at several levels, then perforated at 7415-50 feet with 40 shots for final completion.

Phillips Petroleum Company had an option of some 13,000 acres including the producing well, but relinquished the option after the tests were completed.

Temple Hargrove, Cockburn Oil Corporation and Shell Petroleum Corporation have completed a deal for drilling of another deep test on the La Sal Vieja prospect in Willacy County. Should production be developed on the 7600-foot prospect, a recycling unit and natural gasoline plant is expected to be constructed. Plans for the unit have not been announced, but it is generally understood that this will be the method of production.

Humble Oil & Refining Company extended the Kelsey field another 1966 feet farther east into Brooks County with McGill Brothers 2, which flowed 140 barrels of oil per day without water through 11/64-inch choke under pressures of 625 pounds on tubing and 1275 pounds on casing. It had been drilled to 4772 feet, but plugged and was finished at 4690-4733 feet. A failure resulted in Bass 2, 1866 feet north of the discovery, which was abandoned at 4771 feet. It made several tests but failed to show for a producer.

TEXAS GULF COAST COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Anahuac	1	1	0	0	7,140
Boling	1	0	1	0	6,131
Dickinson	1	1	0	0	8,115
Eureka	1	1	0	0	7,779
Fairbanks	1	1	0	0	6,841
Friendswood	2	2	0	0	12,091
Hardin	1	1	0	0	7,645
Hastings	1	1	0	0	6,080
Hull	1	1	0	0	5,625
League City	1	0	0	1	9,395
Lochridge	1	1	0	0	6,369
Markham	1	1	0	0	3,837
Nome	1	1	0	0	6,045
Pierce Junction	2	1	1	0	9,368
Tomball	2	1	1	0	11,128
West Columbia	1	1	0	0	5,653
Withers	2	2	0	0	11,093
Wildcats:					
Ft. Bend	1	0	0	1	1,503
Total	22	17	3	2	131,838

Texas Gulf Coast

Prepare to test Frio sands in Orange's Echo area.

League City deep test is in shale at 10,135 feet.

Houston.—In the Echo area, Orange County, Sun Oil Company is preparing to make a test of Frio sands at 8995 to 9010 feet in Lutcher Moore 1-A, Johnson Survey. The hole was plugged back to 8900 feet from 9525 feet, and cement was drilled out to 9020 feet before perforating. According to reports the well has had several shows of oil up the hole which might produce if the lower sand does not.

The first 10,000-foot well for League City field, Galveston County, is Phillips Petroleum Company's Patton 1, which was coring ahead below 10,135 feet in shale last week. It already has passed the established producing horizon in the area. The same firm's Ott 1 was reaming at 8705 feet after coring a sand with a show of oil from 8683 to 8702 feet that showed 13 percent saturation. A test may be made of this sand. The 8683-foot horizon would be a new sand for the field.

Phillips Petroleum Company's Stewart Title Company 1 was coring in shale at 8845 feet, after coring oil sands from 8675 to 8689 feet and a sand with an oil odor from 8689 to 8693 feet.

Coyle-Concord Oil Company is testing Powell B-4 at Garwood, Colorado County. The hole is bottomed at 6158 feet in sand with a gas odor topped at 6156 feet. Five and half-inch casing was set at 6004 feet. The well has cored broken oil sands from 5900 feet to the bottom. From 6033 to 6037 feet a core showed four percent saturation.

Humble Oil & Refining Company is preparing to make a production test on Failor 1, northeast of production at Cheek, Jefferson County. The hole is bottomed at 7740 feet in broken sand. A drill-stem test last week from 7708 to 7723 feet showed 325 pounds pressure and 150 feet of pipe line oil through quarter-inch chokes. A drill-stem test from 7720 to 7728 feet failed. Sand showing oil was cored from 7726 to 7728 feet.

In the Cat Springs area, Austin County, Kirby Petroleum Company abandoned Herring 1, H. & T. C. Section 171 at 4775 feet in salt water sands topped at 4726 feet. The well was reported to be normal with other wells when geological markers were encountered

In the Arcola area, Ft. Bend County, Grisso Royalty Corporation made location for Amelia Smith 1, 466 feet out of the southwest corner of lot 4, block 7, Cochran and McClure subdivision on a 321-acre tract in the M. Shipman Survey.

In the Bammel area, Harris County, Hamil & Smith's Majorwitz 1, W. C. R. R. Abstract 1345, was coring in salt water sand at the end of the week at 6490 feet. Top of the sand was at 6472 feet. Another salt water sand was cored at 6250 to 6260 feet.

Stanolind Oil & Gas Company's Sowden 1, Clear Lake field, J. Lindsey Survey, Harris County, was perforated from 5815 to 5825 feet with 30 shots last week and was completed as a gas well. A test from 5837 to 5844 feet showed 150 feet of gas cut mud, no pressure in 15 minutes. The well is now shut in.

On the south flank of Fairbanks field, Harris County, Amerada Petroleum Corporation and Stanolind Oil & Gas Company completed Munger 3 last week for 153 barrels of pipe line oil daily through a 1/8-inch choke with a tubing pressure of 1025 pounds and a casing pressure of 575 pounds at 6842 feet. Casing was set at bottom and oil sands were logged from 6825 to 6842 feet.

Jack Frazier's Vollmer & Neiman 5 at Eureka, Harris County, has been completed in a deep sand at 8028 to 8058 feet. Casing was perforated with 90 holes and it came in making dry gas. Tubing and casing pressure was 2800 pounds. The well has been shut in.

At Labelle field, Jefferson County, Sun Oil Company completed Broussard Hebert 4 last week for a gas and distillate producer. The well made 1,700,000 cubic feet of gas and 20 barrels of distillate daily. Tubing pressure was 4100 pounds.

On the southeast flank of Esperson field, Liberty County, General Crude Oil Company is preparing to make a drill-stem test on Esperson (Core Test). The hole is bottomed at 7341 feet in sand showing oil. A sand showing oil was also cored from 7311 to 7316 feet and at 7331 feet.

South of production at Cedar Point in Galveston Bay, Chambers County, Standard Oil Company of Texas was preparing to make a production test on State 118-35. The hole is bottomed at 6021 feet in salt water sand. Gas sand was cored from 5925 to 5945 feet and oil sand from 5945 to 5965 feet. Broken shows of oil and gas were cored from 5969 to 6007 feet. Top of the salt water sand was cored at 6010 feet. Seven-inch casing was set on bottom.

Humble Oil & Refining Company has completed another Wilcox producer in the Segno field of Polk County. Kirby B-10, east side of the field, flowed 18 barrels per hour through a quarter-inch choke from 8195 feet. Tubing pressure was 425 pounds and casing pressure was 950 pounds. The 37.9-gravity oil was coming from sands at 8080 to 8090 feet and from 8124 to 8175 feet.

In Waller County four miles north of Pattison, Providence Oil Company's Muske 1, J. Perry Survey was coring in shale last week at 4476 feet after finding salt water sands from 3987 to 3991 feet and from 4294 to 4314 feet.

The Texas Company will attempt again to find commercial production on the Bryan Dome in Brazoria County. Location was made for Freeport Sulphur Company 6, 100 feet out of the northwest corner of a 200-acre tract in the C. Areola League, Abstract 142.

South Louisiana

Eola wildcat proves a producer from Wilcox sand. Expect active Sparta-Wilcox trend campaign.

Lake Charles.—Eola is the first oil discovery on the Louisiana Gulf Coast in 1939, the first field in Avoyelles Parish, the first spot in the area to yield Wilcox formation oil, the first well to be perforated with 672 shots, and is the forerunner of a widespread campaign along the Sparta-Wilcox trend in the Gulf Coast.

Sid Richardson, a Fort Worth operator, is the discoverer with his Haas Investment Company 1. Oil sands were logged in the Cockfield, Sparta and Wilcox formations by the test, any of which are reported to have been capable of producing. The well was drilled to 8581 feet and 5½-inch casing was set at 8574 feet, after which it was perforated with 672 shots from 8443 to 8550 feet. After washing for one hour and 10 minutes, the 107-foot pay horizon started flowing oil by heads. Early estimates were that the well was making 300 barrels daily. Tubing pressure was 1550 pounds and casing pressure registered 1750 pounds. There will not be any official gauge of the well until storage can be erected.

In the LaPice area, St. James Parish, Shell Petroleum Corporation's H. Schexneyder 1, was drilling in sandy shale at 8474 feet last week after making a drill stem test from 7960 to 7970 feet. The test was made in four minutes and the crew recovered nine stands of salt water and sand. A slight show of oil was cored from 8150 to 8155 feet.

Humble Oil & Refining Company will probably test Orleans Levee Board 37 at a new producing horizon for the Potash Dome, Plaquemines Parish. The well was drilled to 8070 feet in shale. A broken formation was cored from 8060 to 8070 feet which showed saturation and an electrical log showed three ohms. A drill stem test made from 8035 to 8070 feet showed 125 pounds pressure in 12 minutes, but the tool failed to close. Casing has been set at 8070 feet.

The Texas Company's Continental Land & Fur Company 1, Terrebonne Parish, wildcat, was drilling in sandy shale at 12,275 feet at the end of the week. A sand section was cored at 11,930 to 12,045 feet but no information was given out as to what the sand showed.

On the flank of Gibson, Terrebonne Parish, Shell Petroleum Corporation's Kuntz 2 was conditioning mud at 10,400 feet after well showed gas. The well will be drilled deeper.

East of production at Lake Long, Lafourche Parish, Fohs Oil Company is preparing to make a drill stem test on State Lake Long 7. The hole is bottomed at 10,248 feet and seven-inch casing was set at 9918 feet. Last week the operators perforated casing from 9862 to 9870 feet to be sure they had good cement job. Cement was squeezed through the perforations. A test will be made of a new sand the coming week.

In West Baton Rouge Parish, Humble Oil & Refining Company's Mrs. Mary B. Levert, at Port Allen, was abandoned last week at 8000 feet. No shows of importance were cored.

W. T. Burton has made another location in Orleans Parish. L & N 3 is 300 feet north and 300 feet east of the southwest corner of Section 25-11s-14e, about two miles north of L & N 2.

In Lake Ponchartrain, W. T. Burton's Faubourg de Monteluzin was abandoned at 10,680 feet last week in salt water sands.

Two new locations were announced at Golden Meadows field, Lafourche Parish, last week. Seismographic Supply Company made location for School Land 1, 250 feet south and 200 feet east from the northwest corner of Section 16-20s-22e. Martex Oil Company's Falgout Holding Company 1 is in Section 9-19s-22e.

Villa Platte field, Evangeline Parish, was extended a half mile northwest last week when The Texas Company completed its second producer in the district. Norman Fee 2 flowed 200 barrels daily through a 3/8-inch choke. The hole was drilled to 8988 feet and cored the Haas sand from 8955 to 8980 feet. A broken formation with a show of

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COMPRESSED ASBESTOS SHEET PACKING

oil was cored from 8980 to 8988 feet. Six and five eights-inch casing was set at 8958 feet.

Republic Production Company has two wells at Bancroft, Beauregard Parish, on the oil sands and will make production tests the coming week. Columbia Land & Timber Company 4 is bottomed at 7335 feet and seven-inch casing was set at 7329 feet. Columbia Land & Timber Company 5 is bottomed at 7340 feet with seven-inch casing set at 7330 feet.

At North Crowley field, Acadia Parish, Humble Oil & Refining Company's Habetz 3 showed salt water in two horizons during the past week. The casing was perforated first at 8575 to 8577 feet and then at 8198 to 8203 feet and both times salt water was recovered. The hole is now at 8240 feet waiting on cement to set.

Superior Oil Company has completed another well at Creole, in Gulf of Mexico, offshore of Cameron Parish. State 4 came in flowing 300 barrels daily through a 12/64-inch choke with a tubing pressure of 600 pounds at 5150 feet.

Louisiana state lease sale

Shreveport, La.—The State Mineral Board of Louisiana has announced it will receive bids at Baton Rouge, at 11 a.m., February 7, 1939, for the leasing of approximately 24,525 acres of state-owned land, embraced in nine tracts in seven parishes. The parishes included are Jefferson, Terrebonne, LaFourche, and Concordia in south Louisiana and 4036 acres in NW SE 13-23n-2w, Union Parish and 2000 acres in Red River, Red Bayou, Dooley Bayou, Sewell's Canal, Kelly Bayou and Black Bayou and all tributaries not under lease in townships 21 and 22 north, ranges 14 and 15 west, Bossier and Caddo parishes. A major company owns most of the acreage around the Union Parish tract and the Caddo and Bossier lands are in an area that has seen considerable leasing in recent months.

North Louisiana Fields

Ninth producing well completed at Shreveport. DeSoto Parish wildcat logs Paluxy showing.

Shreveport, La.—Successful completion of Hurricane Petroleum Company's (M. J. Grogan) W. B. Chandler et al B-1, C NW SE 34-18n-14w, Caddo Parish, last week brought to nine the total of oil producers in the Shreveport field, which produces from basal Glen Rose lime (Pettet). The new well flowed 31 barrels of oil per hour through one-half inch tubing choke after perforating casing from 5615 to 5618 feet; tubing pressure being 1375 pounds and casing, 1825 pounds. The well logged 16 feet of porous lime from 5605 to 5621 feet; elevation is 240 feet. The Shreveport field also has one gas-distillate well producing from the Pettet lime.

The eighth well of the field was W. C. Feazel's T. R. Hughes 1, SE SE 33-18n-14w, one mile south of production, completed late in the preceding week, and which gauged 32 barrels per hour for first 21 hours flowing through 18/64-inch choke after perforating with 23 shots from 5565 to 5570 feet. Casing pressure was 1075 pounds and tubing, 500 pounds.

Two new locations were made last week in the field, both offsetting producing wells; one being R. L. Bauman's Dorian 1, Section 34-18n-14w, and the other being Hurricane's W. B. Chandler C-1 SW SE 34-18n-14w, offsetting its B-1. Two other tests are drilling, another has spudded and a fourth is rigging.

R. E. Allison, discoverer of the field, is re-working Ellerbe 5, Section 34-18n-14w, in an attempt to lower the gas/oil ratio. Perforations from 5548-60 feet have been squeezed off and casing will be re-perforated at 5564-70 feet. The well's former gas/oil ratio has been 14,303 to 1. Allison is also preparing to drill an offset to Feazel's T. R. Hughes 1, which on latest 24-hour gauge showed 462 barrels of oil and 384,000 cubic feet of gas on a 12/64 inch choke, tubing pressure being 700 pounds and casing, 1500 pounds. The gas/oil ratio was 831 to 1.

Samuel S. Alexander was preparing to run formation tester to 3046 feet in the Paluxy series in Stell A-1, NE NE 5-12n-16w, DeSoto Parish wildcat, after reportedly logging a showing of gas and oil and running electrical log. At 2710 feet this test had shown some oil and about two million cubic feet of gas daily.

Woodley Petroleum Company's Couch 1, CSW NW 36-21n-10w, on the southeast flank of the Cotton Valley field, Webster Parish, where the Bodcaw or "E" sand of the lower Marine has been found productive of oil, drilled Thursday at 8443 feet preparatory to coring. Oliphant Oil Company's Gray-Stephens 1, SW NW 35-21-10w, cored at 8447 feet. H. L. Hunt having run liner through the "D" sand at J. B. Sandefur 1, NE NE 4-20n-10w, south edge test, prepared to test the Bodcaw. This operation has been testing the lower Marine several weeks without getting commercial production.

Union Producing Company's Walker Unit 1, C 30-18n-8w, Webster Parish, 9000-foot test for the Dubberly field, is drilling plug in 9⅝-inch casing set at 6490 feet. Electrical log run to that depth reportedly showed several sections of good porosity and resistivity in the Glen Rose series.

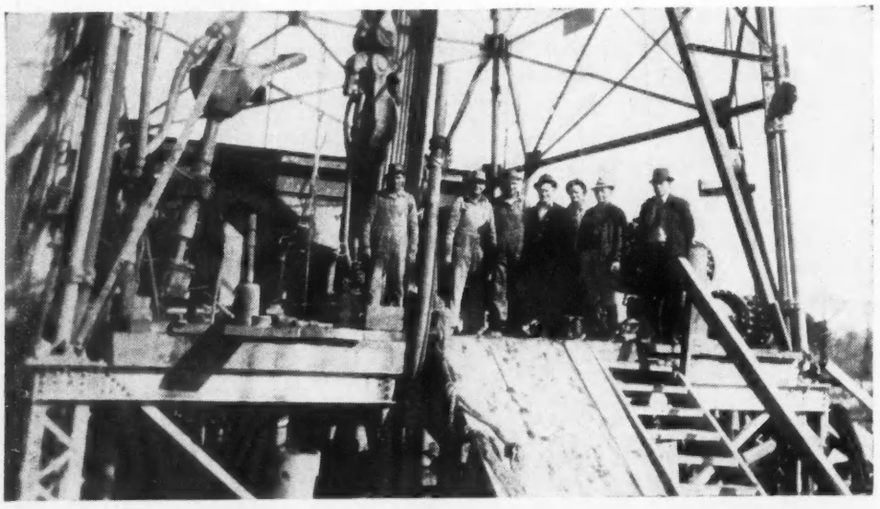
E. T. Oakes is swabbing with some oil showing after acidizing E. C. Kilgore 2, NW SE 28-21n-5w, Claiborne Parish, one and one-half mile northwest of Lisbon production. Depth is 5317 feet.

T. D. Humphries and associates of Dallas have assembled about 4000 acres centering around Section 12-12n-14w, near Mansfield, DeSoto Parish, for a shallow test, which, however, will set large casing so it can be taken to deeper levels.

In the Shongaloo district, Webster Parish, Magnolia Petroleum Company's Branton 4, C NE 6-22n-9w, drilled at 8767 feet in sand and shale, after topping the Cotton Valley lime at 7750 feet, the Travis Peak at 5780 feet and logging massive anhydrite from 4400

SOUTH LOUISIANA COMPLETIONS

Field or Parish	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Darrow	1	1	0	0	7,071
Lafitte	1	1	0	0	10,069
Leesville	1	1	0	0	5,695
Lirette	1	0	0	1	11,680
Timbalier Bay	1	1	0	0	8,728
Wildcats					
Orleans	1	0	0	1	10,680
West Baton Rouge	1	0	0	1	8,000
Total	7	4	0	3	61,923



These men seen on the derrick floor of Sid Richardson's Haas Investment Company 1 at Eola, Avoyelles Parish, successfully brought in the first Wilcox producer in South Louisiana and the first oil in Avoyelles Parish. From left to right they are: E. E. Poskey, J. A. Cronin, C. A. Tilley and M. D. Murrell, members of the crew; Grant Lindsey, production superintendent; W. D. Haas, Jr., son of Dr. W. D. Haas, on whose property the well is located, and Roy Mangham, driller.

to 4635 feet; elevation is 227 feet. In the same district Magnolia's Roseberry Unit 1, C SE 29-23n-9w, with elevation of 337 feet drilled at 6210 feet in red shale and sand after topping Travis Peak at 5900 feet.

North American Consolidated Oil Company's Stewart 4, C NW SE 29-21n-10w, on the west edge of the lower Marine producing area at Cotton Valley, Webster Parish, was completed last week flowing 370 barrels of distillate in an 18-hour gauge, through 7/16-inch choke, from the Bodcaw sand logged at 8430-73 feet, with casing perforated at 8432-62 feet. Casing pressure was 2700 pounds and tubing, 2500 pounds. Total depth is 8713 feet. Elevation is 251 feet. Top of Davis or "F" sand was 8686 feet.

Oliphant Oil Company's Stewart B-2, C NW NW 4-20n-10w, southwest flank test, that showed 155 barrels of distillate and 103 barrels of salt water in 24 hours in the "E" or Bodcaw sand at 8697-8706 feet, topped the Davis or "F" sand at 8930 feet, only to find it tight and non-porous, and is being deepened possibly to the Permian, was drilling at 9182 feet last week making slow progress.

Arkansas-Louisiana Gas Company's Gayoso 2, C SE SE 14-16n-10w, wildcat at Bisteneau, Bienville Parish, was coring at 5179 feet after showing only 35 feet of mud in a 15-minute drill-stem test with ¼-inch chokes at top and bottom in the Pettet (basal Glen Rose) lime from 5115-57 feet; elevation is 188 feet. The test is coring for the Travis Peak. This test logged massive anhydrite from 3898 to 4135 feet. In this same area, Skelly Oil Company recently leased NW 8-16n-9w.

Jack Lent and associates' Whatley 1, SW SE SW 17-10n-10w, Natchitoches Parish wildcat near Ajax, was drilling at 1602 feet near base of Annona chalk after a reported showing of oil and gas at 1030-50 feet at what was identified as base of the Midway. Operators reported Nacatoch missing and that 90 feet of chalk (sand) and marl, some of which showed some oil and gas, was cored from 1470 to 1560 feet. This is a 3500-foot test. In the same parish in townships 11 and 12 north, ranges 6 and 7 west, Shell Petroleum Corporation has a seismograph unit at work.

NORTH LOUISIANA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Caddo:					
Pine Island	1	0	0	1,575
Shreveport	2	0	0	11,266
Concordia:					
Wildcat	0	0	1	4,512
DeSoto:					
Bull Bayou (Naborton)	0	0	1	2,720
Sabine:					
Zwolle	0	0	1	2,649
Webster:					
*Cotton Valley	1	0	0	8,724
Total	4	0	3	31,446

*Distillate well.

ARKANSAS COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Miller:					
Rodessa	1	0	0	6,227
Union:					
Schuler	6	0	0	46,409
Total	7	0	0	52,636

Arkansas Fields

Schuler field receives six new producing wells

El Dorado, Ark.—The Schuler field, Union County, the most active district in Arkansas, had one of its largest weeks from a completion standpoint last week when six new oil wells were completed, four from the lower Marine (Jones sand) and two from the Permian (Reynolds) lime. Another well, Phillips Petroleum Company's Amanda 2, NE SE 12-18-18, on the west edge of the field, was testing January 19 after casing was perforated at 7586-7609 feet. Two other operations, both inside production were waiting on cement to set on final strings of casing.

New Magnolia Well

Another producer appeared assured for the Magnolia field, Columbia County, at Atlantic Refining Company's F. Barnett 1, C SW SE 14-17-20, which waited on cement to set on final casing string. Total depth was 7610 feet, with casing cemented at 7499 feet. Top of oil saturation was 7478 feet. The well was to be tested during the week-end.

Deep Rock Oil Company's and Tidewater's A. C. Wesson 1, NE SE SE 23-15-19, Ouachita County, proposed Permian geophysical prospect near Stephens, drilled ahead at 3930 feet in red shale.

Although drill-stem tests in the Permian lime below 7000 feet proved disappointing and the area showed little besides structure, Shell Petroleum Corporation and Ohio Oil Company set casing and last week were preparing to test Warren 1, SE SE 13-16-24, LaFayette County wildcat, after having run electrical log. Seven-inch casing was cemented at 7169 feet, 1 foot above top of Smackover (Permian) lime and 9 feet above where first saturation was logged. Revised total depth is 7220 feet. The operation showed some oil and brackish water when formation tester was run from 7169 to 7215 feet.

This test checked over 400 feet higher than a test drilled two years ago by Erwin & Leach and Ohio Oil Company 4 miles to the east of present location. Present operators detailed the area thoroughly before location was made and it is not likely that a more favorable location remains in that area than the present one. Permeability of the Permian lime decreases rapidly to the west. Arkansas' most western field producing from Smackover lime is Buckner in township 16, range 22, Columbia and LaFayette counties.

Plan Permian Tests

A Smackover (Permian) lime wildcat test will be drilled by Amerada Petroleum Corporation in Bradley County, Arkansas, six miles south of the village of Vick, where this company carried on geophysical exploration for several

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SHREVEPORT LOUISIANA

Lake Charles—Houma—Converse
New Iberia—Monroe
Cotton Valley—Greggton
Magnolia—Houston

months. Tentative location has been made in Section 11-17s-10w and Edwin M. Jones will be drilling contractor. Work will start by March 1, weather permitting.

A Permian lime test is planned in the old El Dorado shallow field of Union County, H. H. McBride and associates having assembled over 1000 acres scattered in and around the field and centering for the most part around Section 31-17-15, west of the city of El Dorado.

The greatest amount of wildcat leasing for the last fortnight in south Arkansas has been south, southwest and southeast of Magnolia, Columbia County, in township 18, ranges 20, 21 and 22. In the northern part of township 18, range 20, Phillips Petroleum Company and Mid-Continent Petroleum Company leased a number of tracts. South of Magnolia, H. L. Hunt has been leasing in township 17, range 21, and southeast of the village of McKamie in the same county, Hunt and Lion Oil Refining Company have been leasing in township 17, range 22. Standard Oil Company of Louisiana has a seismograph unit working in township 18, ranges 20 and 21. H. L. Hunt has also been active recently in township 17, range 17. Union County, north of the village of Cairo. In the lower part of township 17, range 12, Union County, Amerada Petroleum Corporation has a shooting unit working. Atlantic Refining Company has a seismograph unit in township 18, range 14 and Stanolind Oil & Gas Company has a similar unit northeast of Lawson in township 17, range 13.

NOTICE IS HEREBY GIVEN that there will be a meeting of the State Mineral Lease Commission of Mississippi, in the office of the Governor of said state, at Jackson, at Ten o'clock A. M. on Wednesday, February 1, 1939.

At this meeting the Commission will receive proposals for the leasing of the Mississippi Sound, and other tidal lands on the Mississippi Coast—estimated as being 350,000 acres, for oil and gas exploration. Any and all parties interested in the development, exploration and leasing of all, or any part of this area for oil and gas purposes are invited to submit, in writing, said proposition to the Commission at this meeting.

It is the purpose of the Commission to contract the states rights in this area for said purposes, if suitable and proper proposition is submitted therefor. Contract in this respect will be made with the party or parties submitting what the Commission deems to be satisfactory bid, or bids, for said lands for said purposes. The propositions so submitted, in addition to stating amount to be paid for said privilege, should outline the method and procedure to be followed in the exploration and development of this territory, and particularly setting forth the care and caution to be taken in an effort to prevent damage to fish and fishing rights and incidental damage to other property, private and public. All propositions should be submitted to the undersigned on or before the time above specified. The Board reserves the right to reject any and all bids and also to lease any part or parts of said property to one or more persons.

STATE MINERAL LEASE COMMISSION

By GREEK L. RICE, Attorney General
SECRETARY

Southeast States

Moving in for another southeast Alabama test

Mobile, Ala.—Another location for southeast Alabama, and the third for Houston County, was made last week by Columbia Oil Company for State School Land 1, SEc NE NE 8-2n-29e, where materials have been moved in for a 96-foot derrick. Both of the two former tests drilled in Houston County were operations of Rice Oil & Gas Company, the last of the two, in 1937, being Oakley Estate 2, NW SW 9-3n-29e, abandoned at 4975 feet.

H. A. Stebbinger's Alyce Robertson 1, NE NE 19-10n-26e, Barbour County, southeast Alabama, that reported a slight show of oil at 2200 feet, top of the Tuscaloosa (Woodbine), is drilling and coring shale and sand at 4005 feet.

Mississippi will lease Gulf Coast bottoms

Jackson, Miss.—Following an inspection of the operations along the Louisiana coast at the invitation of the Louisiana Conservation Commission, the Mississippi State Mineral Lease Commission in a meeting in Governor Hugh L. White's office in Jackson January 12 passed a resolution to lease all or any part of the Mississippi Gulf Coast bottoms, consisting of approximately 350,000 acres, bids to be received in the office of Governor White at 10 a.m. Wednesday, February 1, 1939. Notice to this effect was issued by the commission through Attorney General Greek L. Rice, a member.

All persons interested in development, exploration or leasing of all, or any part of this area for oil or gas purposes are invited to submit bids. Bids should outline method of procedure it is proposed to follow.

With elevation of 555 feet this test topped the Eutaw (Blossom) at 1625 feet, topped Tuscaloosa at 2200 feet and logged streaks of igneous rock at 3720 feet.

In the Everglades of Florida, 41 miles west of Miami, Peninsular Oil & Refining Company is drilling below 20-inch surface casing cemented at 109 feet in J. W. Cory 1, C NW 6-55s-34e, a deep test. A 136-foot derrick is at this location and a heavy rig is being used.

St. Mary's River Oil Corporation's Hilliard Turpentine Company 1, NW NW SE 19-4n-24e, Naussau County, Florida, has lowered 6-inch casing to bottom at 4342 feet and is arranging to test.

In Levy County, Florida, Sholtz 2, SW SW NE 9-15s-13e, owned by Florida Oil Discovery Company, is attempting to core in a hard formation at 4326 feet which was logged under a 7-foot sand section, samples of which showed some gas and a little oil reaction.

Mississippi wildcat resumes drilling

Jackson, Mississippi.—Charles W. Crader and associates' John Bruce James 1, NE NE 24-11s-6w, Yalabousha County wildcat, resumed drilling last week at 2002 feet after being shut down for one month at 2002 feet in shale.

Following were locations of geophysical crews in Mississippi last week: Union Producing Company, northwest Clarke County; Barnsdall Oil Company, a reflection seismograph unit, Wilkinson County; The California Company, a gravimeter unit, Pike County, near McComb; Sun Oil Company, torsion balance unit, Forrest County. An S.S.C. seismograph unit is working around Mobile Bay, Alabama, reportedly for Phillips Petroleum Company.

New Mexico Fields

Lovington gets second producer and a failure. Starts in Lea County decline to 7 during week.

Hobbs, New Mexico.—The Lovington pool, Lea County oil and gas area, added its second oil producer and a possible failure on offset sites.

Amerada Petroleum Corporation's State 1-A-L, C SE SW 1-17s-36e, northwest offset to a gasser in the Yates sand, and 1¾ miles south of the discovery oil well, swabbed 3 barrels oil hourly from Permian saturation at 4664-4815 feet. Production increased to 10 barrels hourly on swab after using 1000 gallons of acid. The well was retreated with 2000 gallons of acid and flowed 35 barrels oil in 1½ hours for preliminary proration gauge.

An east offset to this new producer drilled by Stanolind Oil & Gas Company on state land missed the porous zone in drilling to 4980 feet, or 1154 feet sub sea, as compared to a bottom hole datum of minus 985 feet for the producer. Two-stage acid treatment with 3000 gallons of acid failed to develop oil or gas production. Stanolind Oil & Gas Company plugged back to 4195 feet, and late last week was preparing to gun-perforate pipe opposite dry gas zone in Yates, topped at 3030 feet, to temporarily complete as a gasser. Both wells are on leases that require production by January 23. If the lease is perpetuated, Stanolind Oil & Gas Company is expected to deepen its State 1 to water, then plug back and shoot the big lime section.

Repollo Oil Company's State 1-182, 1½ miles northeast of the above operations, cemented 7-inch at 4540 feet, with the

hole bottomed at 4545 feet. It is also slightly more than mile southeast and 31 feet higher on the Yates marker than Skelly Oil Company's State 1-N, which proved the area for oil production January 7, or 5 days ahead of lease expiration. The discovery flowed 49 barrels of pipe line oil in 10 hours through 18/64-inch choke, according to latest gauge. It was drilled to 5012 feet, or 1163 feet sub sea.

Barnsdall Oil Company's State-Humble 1, 2¾ miles west by south of the Lovington oil discovery, will remain shutdown indefinitely at 4997 feet, or 1095 feet sub sea. The lease expired December 17 before the test reached a decisive depth in the Permian. The company bid only $300 cash for a new lease on the 240-acre site at the January 11 auction held by the state, indicating the company does not place a high value on the oil prospects. Another company made a larger offer, but both were turned down by the state.

New Tests Decline

New tests for Lea County declined to 7 the past week as compared to 15 the previous week. Monument accounted for two that were authorized by Continental Oil Company et al on the east edge. These were Britt 2-B-10, C W½ NW SW 10-20s-37e, and Britt 4-B-15, NW SW SW 15-20s-37e. The partnership also made location for Lockhart 4-B-1, C W½ SW NE 1-22s-36e, offsetting production in the Eunice-Penrose prolific area.

Repollo Oil Company's State 2-197, SE NE SE 6-17s-34e, north offset to an isolated producer that is 2½ miles northwest of Vacuum field, was drilling at 1920 feet, with an elevation of 4110 feet. It is credited with having topped the anhydrite 12 feet higher than the producer.

Vacuum field failed to contribute its usual quota of new operations the past week. Operations may be curtailed until congestion is relieved on the Texas-New Mexico Pipe Line Company's line, which is due to be looped between Lynch and Jal stations. No important extensions are being sought by the current tests. The Texas Company's State 3-R, located on the south end, was listed as a completion, flowing 40 barrels oil in 8 hours through 7/8-inch choke after installing flow valves. Saturated zone at 4350-4710 feet was given 3-stage treatment with 6000 gallons of acid.

The sandy-lime belt in eastern Lea County accounted for 3 new operations. In Penrose field, The Texas Company's Falby 2-B C SE SW 8-22s-37e, has set surface pipe. Weier Drilling Company's Woolworth 3, NE SW SW 28-24s-37e, has installed cable tools. Richmond Drilling Company's State 2-A, C SW SW 2-25s-37e, is a location for the east edge of the Langlie field.

Maljamar Oil & Gas Corporation, discoverer of the Maljamar field, and only active participant in some months, has made location for Baish 2-B, C NE NE 27-17s-32e.

NEW MEXICO COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Lea—					
Eunice	1	1	0	0	3,830
Hardy	1	1	0	0	3,790
Lovington	1	1	0	0	5,012
Mattix	1	1	0	0	3,565
Vacuum	4	4	0	0	18,743
Total	8	8	0	0	34,940

Rocky Mountain Fields

Probable Lance Creek extension to the south.

Field may receive another buying concern.

Casper, Wyo.—Portable extension of the proven area of the Lance Creek field, Niobrara County, to the south, was seen in early tests of Adams Oil & Gas Company and Felmont Oil Corporation's Baker 1, NW NE SW 8-35n-65w, which is circulating and preparing to swab the Leo bench zone of the Minnelusa series at 5566 feet. The well is located one-quarter mile south and ½ mile east of the Continental's Dielman 1-B, southern outpost in the Lance Creek field area. The Baker well reported good saturation in the formation and is expected to make a commercial completion.

Other developments in the Lance Creek field show Ohio Oil Company rigging up to deepen Leo 1 OPC-7, NWc SE 35-36n-65w, eastern outpost location in the field, from its old total depth of 5641 feet, where it completed in September, 1937, for 13 barrels of oil and 50 barrels of water initial. The test is about ½ mile due east of the company's Leo 5 OPC-16, Leo discovery well for the Lance Creek field and ¼ mile east of Ohio's Leo 6 OPC-16 which is drilling at 5450 feet where it is believed to be about 70 feet above the objective Leo sand horizon. Top of the red marker bed was logged at 5520 feet.

Continental Oil Company also is completing Schuricht 7-B, NW NW SE 6-35n-65w, Sundance well in the Lance Creek field. The well tested 5 barrels per hour from the Basal Sundance formation at 3983 feet. Operators are cleaning out and will place on production. Hole has been plugged back from a depth of 4010 feet, where water was encountered in the Sundance horizon.

Sinclair-Wyoming Oil Company has started work on another Sundance well in the Lost Soldier field, Sweetwater County, southwestern Wyoming. New hole will be Lost Soldier 82, NE SW SW 11-26n-90w. Portable rotary equipment has been moved to location and is being rigged up for the well. Company's Lost Soldier 81, SE NW 11-26n-90w, in the same field, is drilling ahead at 2035 feet with standard tools. The well went to 2030 feet with rotary equipment and is being drilled ahead in the Sundance objective horizon for completion.

Sinclair also is moving in rotary equipment for Mahoney 2-A, C SW NE 34-26n-88w, newest start in the Mahoney Dome field, Carbon County, southern Wyoming. Tools and equipment are being moved from company's Mahoney 4-C, recently completed in

MONTANA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Toole	1	0	0	1	1,845

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the deep Tensleep oil producing formation of the Mahoney Dome field.

Operators have succeeded in installing control head on Wyoming Petroleum Corporation's Charles Budd 1, C NE NE 10-29n-113w, wild gasser on the Big Piney structure, in Sublette County, western Wyoming, and heavy mud is being pumped in to kill the flow. The well has been running wild at the rate of 40,000,000 cubic feet of gas daily for the past month; the gas flow being accompanied by some 3000 barrels of water daily which froze and delayed work on the well when it completely sheathed the derrick in ice, making it impossible to install the control head.

Joan Oil Company and the Nelson, Story, Hogan, Ltd.'s Howell 1, NW SE NE 32-56n-97w, will be deepened. Rotary equipment has been moved in by contractors who will drill ahead from present total depth at 2718 feet.

New outlet for Lance Creek crude

An additional outlet for crude from the Lance Creek field, in Niobrara County, eastern Wyoming, appears to be pending. A deal for the sale of an unreported quantity of oil from Ohio Oil Company's holdings in the Lance Creek area to The California Company for refining and marketing through the latter firm's retail outlets in the Rocky Mountain territory is being considered.

Arrangements have been made with Bay Petroleum Corporation, of Denver, Colorado, to have the crude processed at that company's refinery at Denver. At the present time the Denver plant of Bay Petroleum is running Lance Creek crude delivered via the recently completed Rocky Mountain Pipe Line Company's carrier connecting the field with Denver. California Company crude purchases, it is stated, would augment and not replace Bay purchases from the Lance Creek field, thus increasing both the field market and the plant throughput.

Crude processed for The California Company would be sold through that company's retail outlets controlled by the Navy Gas & Supply Company of Denver, which recently contracted to handle California Company products through its service stations located in the entire Colorado district. The company by this arrangement has around 200 retail outlets for its products.

California has processed some 2000 barrels of crude daily; 1000 barrels each at the Sinclair-Wyoming Company's refinery at Parco, Wyoming, and at Utah Oil & Refining Company plant at Salt Lake City. The California Company at present operates no refinery in the Rocky Mountain district although controlling crude output from the Quealy Dome field in Albany County, Wyoming, and a percentage of the output of the Big Medicine Bow field, in Carbon County, Wyoming. These fields furnish the crude for the company's supplies furnished from the Wyoming and Utah plants but were found insufficient to provide enough gasoline to care for the expanded Colorado retail set-up.

The company operates service stations in Wyoming, Colorado, Utah, and Nebraska from its Denver headquarters while additional expansion is being planned into Montana and the Dakotas.

California Fields

Superior starts 6 tests in Coalinga-Eocene field.

Greeley outpost cores good shows in Vedder zone.

Los Angeles.—Superior Oil Company has staked a half dozen new sites for wells that will be drilled in the east Coalinga Eocene pool, discovered in 1938 by Petroleum Securities-Honolulu Oil-Seaboard Oil combination.

Last week Superior's Cagle 1, situated in Section 6-20-16, was coring ahead in oil sand below 7300 feet with the expectation of picking up the top of the Gatchel zone. Due to the substantial blow of gas and oil during a formation test around 7142 feet it is believed the well will soon be on production.

Robert S. Lytle, operating for Petroleum Securities Company, is grading location for No. 51-7F in Section 7-20-16; for No. 3-18F in NW of 18-20-16; and for No. 22-18F in the C NW 18-20-16. Superior Oil Company is completing foundation for Coalinga Fee 3, NEc 7-20-16, while The Texas Company is preparing to drill its No. 1 well in Section 6-20-16.

This new burst of drilling activity is not unusual on the part of the major operators because they are endeavoring to find the productive limits of the new Eocene pool which has developed some unusually productive wells. Under the present development program this field will be orderly developed as recommended by the Central Committee of California Oil Producers which falls in line with the idea of the federal government, as considerable acreage held by the operators of East Coalinga Eocene pool is controlled by the government.

Seek to Extend Greely

Seeking an extension to the Greely field, Kern County, Superior Oil Company is preparing to land a string of casing in its KCL 12 wildcat situated in NEc 3-30-26. This project is coring below 11,200 feet, having picked up the top of the Vedder zone at 11,130 feet. Good showings have been encountered. Superior controls 3000 acres that offsets property held by Standard Oil Company. Standard Oil Company's Elrich Community 1 in Section 20-29-26 is making progress in shale below 10,900 feet, and is rigging up Ross 1 that prospected to 8110 feet last November. Opinion is that due to the development of deeper production at Greely that by deepening Ross 1 the Vedder zone will be found productive.

Failing to develop production in its latest test at Edison, Kern County, and delaying the start of two or more new projects in the Los Angeles Basin pending the results of nearby tests, Wood-Callaghan Oil Company has acquired a few acres and several drilling sites in the east portion of the West Montebello Extension and is slated to spud in Harris 1 this week. This new undertaking, which is situated on a two-acre parcel, offsets Union Oil Company's Calkins 1, which is drilling below 6800 feet in shale and oil stringers, after having made a test of the Masser zone. The company has staked location for Cowan 1 on a four-acre parcel and will also drill Grant 1. Brookline Oil Company has staked tentative location for Keiselsort 1 that will offset Union's Calkins 1. Standard Oil Company has completed McDonald 1. It came in for an unestimated amount at 6626 feet.

In an area described as the Tejon Flats near Wheeler Ridge, Kern County, Tide Water Associated Oil Company's S. P. 2, NWc 15-11-19, is coring at 6800 feet in hard brown shale with occasional streaks of gray sand. Formation tests made over the week-end lead to the belief the company has found something of interest at the foot of the Grapevine. This project is not far from Richfield Oil Corporation's KCL 1 in Section 28-11-20, which is credited with a new field discovery in 1939. However, this project is reported to be wet near bottom and the well has been plugged higher in an endeavor to shut out water. KCL 1, originally drilled to 9272 feet, is plugged at 8765 feet. Richfield's Union Avenue 1 wildcat in Section 6-20-38 in the Union Avenue district, last week resumed operations and is coring below 8800 feet in shale.

Good news has been received by the supporters of oil curtailment in this state. The Navy Department issued a statement to the effect that if Richfield Oil Corporation participates in the production curtailment program on its Navy lease at Elk Hills, Kern County, it will permit the company to continue operating until it has recovered as much oil as it failed to produce because of curtailment. This will extend Richfield's lease on this property which would have otherwise expired in 1941. Richfield's answer to previous requests to curtail production on Navy lands had been that it had only a short time in which to produce.

CALIFORNIA COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Los Angeles	10	10	0	0	48,097
Kern	6	5	0	1	36,410
Kings	1	1	0	0	7,650
Santa Barbara	1	1	0	0	7,238
Ventura	4	4	0	0	24,987
Total	22	21	0	1	154,382

North Pecos Valley hearing scheduled

The Texas Railroad Commission has scheduled a hearing for January 31, at Austin, on the North Pecos Valley Pool in Pecos and Ward counties. Operating rules for the field will be considered at the hearing.

Michigan Fields

Ottawa County strike may be start of extensive campaign. Wise pool production is extended more than a mile north.

Mt. Pleasant, Mich.—A new Western Michigan pool was indicated, a pool in Kent County believed definitely established, and in Central Michigan an important 1¼ north extension provided for the new Wise district, Isabella County.

Carscallen & Anderson's Longnecker 1 wildcat, SE SE SE 4-7n-14w, Tallmadge Township, Ottawa County, topped Traverse limestone at 1985 feet and at 1986 feet filled with 800 feet of oil in 6 hours in an uncased 6-inch hole. Operators suspended drilling to run 6⅝-inch casing and probably will drill deeper into the formation.

Strike Important

The Ottawa wildcat is of more than ordinary significance and should have important bearing on bringing a major wildcat campaign on a southeast trend through Ottawa, Kent, Barry, Calhoun and Ionia counties this year. Previously Traverse lime has showed saturation in Ottawa but never commercially. The current test had favorable structure position.

Location of the Longnecker 1 is 7 miles northwest of two commercial wells (offsets) in Kent County, one drilled in late fall and the other completed this week. The Kent County discovery, MacCullum & Herr's Story 1, Section 32-7n-12w, Walker Township, topped Traverse at 1865 feet and bottomed at 1997 feet after drilling oil saturation and bottoming in a water zone. It was plugged back 9 feet and acidized into a 96-barrel-initial well. In November this test averaged 45 barrels per day on the pump.

The west offset, completed this week, Smith Petroleum Company's Whalen 1, SW SE SW, Section 32-7n-12w, topped Traverse at 1812 feet and bottomed at 1818 feet flowing by heads 95 barrels natural and 170 barrels following acid treatment.

These two wells are only three miles west of Grand Rapids city limits, and approximately 30 miles southeast of the old Muskegon pool, where both Traverse, Dundee and Monroe production was developed.

Operators would be surprised to find the Carscallen test in Ottawa County linking up with the Kent County pool as a characteristic of the southwestern Michigan district has been a series of small pools along a trend rather than a single major pool.

Giving the trend play further encouragement is a test 18 miles southeast of the two Kent offset producers in Barry County. Collin & Sopers' Simmons 1, Section 3-4n-10w, topped Traverse at 1870 feet and tested oil saturation at 1942 feet three months ago. Last week it was deepened 80 feet to 2022 feet without logging new oil or water. Operators plan to shoot the saturation zone.

About 35 miles southeast of the Barry test, Verona Crude Oil Company's Fruin 1, Section 29-1s-7w, Calhoun County (just outside of Battle Creek), is currently idle at 2915 feet but slated to plug back to 2915 feet and shoot a saturation zone in the Niagaran limestone. Top of this formation was logged at 2790 feet.

Wise Pool in Isabella County Extended

Major development in Central Michigan during the week was a 1¼ north extension to the 1938-opened Wise pool in Isabella County. Burks White and McClanahan Oil Company's Nixon 1, SE SE SE 17-16n-3w, flowed 7 barrels an hour natural the first 10 hours on test before being shut in to tube and acidize. The test logged Dundee lime at 3645 feet, gas at 3694 feet and oil at 3697 feet with bottom at 3702 feet. It is 12 feet higher on the top of the formation than either of the first two wells, discovery and offset. The discovery is flowing about 45 barrels daily and the offset, both drilled by Turner Petroleum Corporation, around 140 barrels.

The Wise pool holds promise of the first in Michigan not controlled by a single company to be drilled on a 20-acre spacing program. Turner Petroleum Corporation, Cities Service Oil Company, Socony-Vacuum Oil Company, Gulf Refining Company and White and McClanahan, who control about 99 percent of the indicated proven area, have already reached a 20-acre spacing agreement. The three completed wells, including the 1¼ extension, and two drilling tests, all were located on 20-acre units.

The Wise pool spacing differs in any previous Michigan unit in that it follows the diagonal 20-acre plan. Pure Oil Company drilled the Yost-Jasper pool on a 20-acre program in Midland County, but not on a diagonal basis. Pure Oil Company also is drilling upper Redding field, Clare County, on a 20-acre program, but not diagonally.

Major news also appeared developing in Eastern Michigan this week as Gulf Refining Company tested Monroe lime oil saturation at 3535 feet on the Bateson 1, SE SE 2-14n-4e, Bay County. At 3530 feet operators swabbed 56 barrels of oil, and at 3535 feet carried 1000 feet of oil in the hole. Gulf Refining Company has a block of several thousand acres in the Bay area which has been both core drilled and seismographed. Two Dundee lime wells, about 2900 feet deep, were completed in 1938, with potentials of 15 and 35 barrels. The current test was cased with 8-inch to 3137 feet with intentions of carrying testing to both the Monroe, Sylvania and possibly deeper formations. The present saturation zone probably will be passed up temporarily for lower formation testing.

Andrews & Walters' Harris 1 wildcat, Section 14-16n-1e, Hope Township, Midland County, is being junked at 4199 feet after testing bottom-hole water. Top of Dundee was logged at 3880 feet with a dead oil show 5 feet in the formation.

MICHIGAN COMPLETIONS

County and Field	Completions	Oil Wells	Gas Wells	Dry Holes	Feet Drl'd
Allegan	2	0	0	2	3,887
Clare	4	2	0	2	15,298
Gladwin	1	0	0	1	2,208
Gratiot	1	0	0	1	880
Isabella	1	1	0	0	3,702
Kent	1	1	0	0	1,818
Mecosta	1	0	0	1	1,350
Midland	1	0	0	1	4,199
Ottawa	1	0	0	1	1,525
St. Clair	1	0	0	1	1,011
Tuscola	1	0	0	1	3,444
Van Buren	9	5	0	4	10,991
Total	24	9	0	15	50,311

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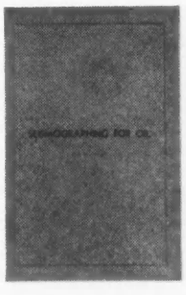

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WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	1	1	...	...	...	...	...	...	...	...
Arkansas	...	1	...	1	...	...	...	...	...	1
California	7	23	5	11	4	6	...	...	1	5
Illinois	4	6	2	3	1	1	...	...	1	2
Indiana	2	3	...	...	...	...	...	...	...	...
Kansas	7	13	5	9	3	4	...	...	2	5
Kentucky	1	1	...	...	...	...	...	...	...	...
Louisiana	5	12	2	8	...	2	...	...	2	6
North Louisiana	1	3	...	2	...	...	...	...	...	2
South Louisiana	4	9	2	6	...	2	...	...	2	4
Michigan	3	12	6	13	...	...	...	...	6	13
New Mexico	...	...	1	1	1	1	...	...	...	...
Oklahoma	2	8	5	14	...	2	1	1	5	11
Texas	15	50	13	42	1	3	1	1	11	38
East Texas	2	3	2	4	...	...	...	...	2	4
North Texas	1	1	4	6	1	2	1	1	2	3
Gulf Coast	1	9	...	5	...	...	...	...	...	5
Panhandle	...	1	...	...	...	...	...	...	...	...
South Texas	9	23	5	19	...	1	...	...	5	18
West Texas	2	13	2	8	...	...	...	...	2	8
Wyoming	1	1	...	...	...	...	...	...	...	...
Total U. S.	48	131	39	102	11	22	2	3	28	81

ALABAMA

FIRST REPORTS

Houston County—Columbia Oil Co.'s State School Land 1, SEc ne ne 8-2n-29e, moving in materials.

CALIFORNIA

FIRST REPORTS

Los Angeles County—A. C. Fisher et al's Dominguez Estate 1, 200 ft n and 175 ft w C/Ls 203rd St. and Western Ave., 2-4-14, grade.

Orange County—Shell Oil Co.'s Irvine 3, 2743 ft due n and 421 ft e from sly c blk 96, Irvine Subd, lcn.

Fresno County—The Texas Co.'s No. 1, 330 ft n and 990 ft e s¼c 6-20-16, lcn. MCA Drilling Co.'s Kreyenhagen 1, 400 ft s and 900 ft e nwc 33-22-16, elev 1366 ft, rur.

Kern County—Union Oil Co.'s Kernco 1-11, 2310 ft s and 2310 ft w nec 11-31-25, elev 298 ft, grade.

Kings County—Burnham & Assoc.'s Bartells 1, rig, lcn to follow.

Monterey County—The Texas Co.'s Arroyo Seco 1, sw 11-19-5, lcn.

COMPLETIONS

Kern County—Richfield Oil Co.'s KCL 1, 450 ft s and 990 ft e C/Ls 28-11-20, elev 2014 ft, 198 ft perf, ldd 8765 ft, flowed 1880 b/d 37.5 grav 2.1% to 39% 700 mcf gas, td 9272 ft. Shell Oil Co.'s S. P. L. 1, 1200 ft s and 1000 ft e nwc 7-29-30, elev 964 ft, conglomerate, abd 3509 ft.

Santa Barbara County—Douglas-Stratton Oil Co.'s No. 1, 700 ft s and 1100 ft e nwc 8-8-33, elev 900 ft, 730 ft perf, ldd 7194 ft, comp on pump 180 b/d 28.0 grav, 50%, 1200 grains per gallon salt in water, td 7238 ft.

Ventura County—St. Louis Oil Co.'s Williamson 1, 1-4-20, 200 ft perf ldd 1885 ft, comp pumping 123 b/d 23.0 grav 3.0%, pumped 3 days, si, td 1995 ft. C. C. M. O.'s No. A-6, 775 ft n and 775 ft e s¼c 15-3-24, elev 360 ft, 558 ft perf, ldd 5423 ft, recomp on pump 200 b/d, 16.5 grav 58% 70 mcf gas.

ILLINOIS

FIRST REPORTS

Clay County—Kingwood Oil Co. and Gulf Refining Co.'s Davis 1, nw se se 26-5n-5e, location.

Marion County — Graves et al's Marion County Coal Co. 1, sw sw sw 29-2n-1e, derrick.

Montgomery County—W. O. Allen's Ward 1, nw nw ne 23-12n-5w, location.

Shelby County—Paul Doran's E. J. Bleseke Jr. 1, ne ne sw 7-9n-7e, spudded.

COMPLETIONS

Jefferson County—Kingwood Oil Co.'s Wayer 1, sw se nw 9-2n-2e, abd 2496 ft.

Wayne County—Whitcher Development Co.'s D. Fitch 1, c n se se 3-1n-8e, Elm River Township, 720 barrels in six hours from McClosky lime between 3096 and 3110 ft, total depth.

INDIANA

FIRST REPORTS

Dubois County—C. C. Taliaferro's J. F. & M. Hopf 1, se nw ne 12-2s-5w, Bainbridge Township, location.

Spencer County—A. A. Douglas et al's S. J. Stocking 1, sec 26-6-6, drilling.

KANSAS

FIRST REPORTS

Barton County—Sinclair Prairie Oil Co.'s Pichner 1, ne se se 10-16-11w, dr.

Cowley County—Phillips Petroleum Co.'s Esch 1, sec ne 19-33-6e, dr.

Ellis County—Smith's Werth 1, swc se 33-15-18w, rig.

Graham County — Continental Oil Co.'s Drumm Commission Co. 1, sec ne 16-9-21w, dr.

Marion County—Vickers Petroleum Corp.'s Sutphin 1, sw se sw 30-22-4e, dr.

McPherson County—Phillips Petroleum Co.'s Esau 1, cel w½ ne 7-21-4w, pits.

Woodson County—Roby et al's Meairs 1, swc nw 21-25-14e, sd.

COMPLETIONS

Barton County — Virginia Drilling Co.'s Clawson 1, swc nw 17-20s-11w, 1 mi sw Ellenwood pool, top Lansing 3054 ft, top Arbuckle 3285 ft, td 3299½ ft, completed, pumped 679 bbls 41 gr.

Cowley County—Henderson's King 1, nec 22-31-4e, 1 mi w Lewis pool, top Stalnaker 1980 ft, top Kansas City 2460 ft, top Mississippi 3038 ft, abn 3041 ft.

Russell County—Yankey & Stearns' Krug 1, nw se nw 7-15s-13w, n of Coralena pool, top Topeka 2743 ft, top Dodge 2999 ft, top Lansing 3030 ft, top Arbuckle 3310 ft, acidized with 9000 gals, completed, td 3329 ft, plugged back 3244 ft, pumped 795 bbls. W. I. Southern, Inc.'s Sellens 1, swc 22-15-13w, n of Sellens pool, top Lansing 3048 ft, top Arbuckle 3352 ft, completed, acidized with 4500 gals, pumped 153 bbls, td 3377 ft.

Woodson County—Klopton et al's Poston 1, nec se 31-26-14e, 2 mi e Brinegar pool, top Mississippi 1507 ft, abnd 1525 ft.

KENTUCKY

FIRST REPORTS

Henderson County—W. H. Parks et al's O. Letcher 1, Scuffletown sec, surface casing set 150 feet.

NORTH LOUISIANA

COMPLETION

Concordia Parish—E. A. Addy et al, Pasternack 1, 49-8n-9e, abn 4512 ft.

MICHIGAN

FIRST REPORTS

Clare County—Lucas Oil Co.'s Schultz 1, Section 4-21n-8w, rig.

Ottawa County—Rycenga & Burts' Knoll 1, NW NE NE, 13-8n-16w, lcn.

Van Buren County—Wright & Millers' Dorsey 1, SE NW NE, 6-3s-16w, drilling.

COMPLETIONS

Allegan County—Muskegon Oil Corp.'s DeHaan 1, nw se sw, 29-4n-11w, Traverse lime 1780 ft, abnd 1868 ft.

Midland County — Andrews and Walters' Harris 1, SW SW SW, 14-16n-1e, Dundee 3880 ft, so 3895 ft, water 4190 ft, abnd 4199.

Ottawa County—Lentz trustee's Meeuwsen 1, NE NW SW, 29-5n-14w, abnd 1525 ft.

St. Clair County—Lee Brown's Johnston 1, NW SE NE, 31-8n-17e, Dundee 656 ft, Monroe 799 ft, abnd 1019 ft.

Van Buren County—Truss et al's Grinnell 1, NE SW SE, 16-2s-16w, Traverse 1016 ft, abnd 1040 ft. K & F's Connery 1, NE NW SW, 13-1s-13w, Traverse 1343 ft, abnd 1345 ft.

NEW MEXICO

COMPLETIONS

Lea County—Skelly Oil Co's State 1-N, C NW NE 36-16s-36e, elev 3849 ft, broken pay 4900-25 ft and 4950-75 ft, td 5012 ft, used 7000 gals acid, flowed 49 bbls. 34.5 gravity oil 10 hrs 18/64-inch choke.

OKLAHOMA

FIRST REPORTS

Ellis County—Hilliard et al's Teton 1, sec ne 35-20n-25w, rig.

Seminole County—Moss' Leachman 1, c n½ se ne 34-10n-6e, mirt.

COMPLETIONS

Coal County—Patsy Oil Co.'s Spence 1, nw se se 19-2n-8e, 2 mi e east end Fitts pool, top Cromwell 4136 ft, top Caney 4375 ft, top Woodford 4860 ft, top Hunton 5032 ft, top Sylvan 5375 ft, abnd 5381 ft.

Kingfisher County—Hollenback & Haley's Zerger 1, c se sw 5-18n-6w, 2 mi se City of Hennessey, top Boraker 2850 ft, abnd 3510 ft.

Okfuskee County — Mead Production Co.'s Pine 1, swc nw 14-12n-11e, ne Sheldon pool, top Dutcher 2565 ft, top Cromwell 2760 ft, top Mississippi 3250 ft, top Chat 3330 ft, top Viola 3425 ft, top Wilcox 3470 ft, hfw, td 3478 ft, abnd.

Pittsburg County — Supreme Oil Corp.'s Hickey 1, nw sw nw 4-2n-15e, 8 mi ne Redden pool, td 643 ft, abnd. Supreme Oil Corp.'s Stevenson 1, swc se 27-3n-14e, 15 mi n Redden pool, td 1300 ft, abnd.

Seminole County—Villines' Dees 1, nec nw 6-8n-7e, 1½ mi w Sancho pool, set 12-in 42 ft, abnd.

EAST TEXAS

FIRST REPORTS

Rusk County—John Wiley, tr., Ham & Boggess' Ash Griffin 1, 330 ft fr m/w/e line and 3000 ft fr s line of John Randolph sur, 4½ mi nw Mount Enterprise, rigging rotary.

Van Zandt County—F. A. Richardson et al's B. C. Dodd 1-a, 75 ft nw of Dodd 1, junked at 4292 ft, dr 600 ft.

COMPLETIONS

Falls County—W. H. Mahon et al's V. H. Moore 1, N. K. Robinson sur, abnd 330 ft.

Van Zandt County—F. A. Richardson et al's B. C. Dodd 1, 150 ft fr s and 450 ft fr e lines of 80-acre tr, T. W. Hutchinson sur, 2 mi s Grand Saline, elev 427 ft, Pecan chalk 2820-2920 ft, top Austin chalk 4126 ft, junked 4292 ft.

NORTH TEXAS

FIRST REPORTS

Clay County—L. T. Burns et al's A. L. Browning 1, SEc blk 94, J. H. Belcher subdiv., 7 mi s by e of Halsell, rigging rotary.

COMPLETIONS

Grayson County—Denver Prod. & Ref. Co's Cannon 2, 300 ft fr NWc of 100-acre tract, E. Barnes sur, A-43, 2 mi n w Whitesboro, s w sd 2401-36 ft, abnd 2512 ft.

Jack County—Harry Lippett et al's Sol Franklin 1, 2050 ft fr n and 750 ft fr w lines of 144-acre tract, H. Ferguson sur, A-215, show gas 3690-3700 ft and 3780-84 ft, top Caddo 4798 ft, abnd 5060 ft.

Montague County — Rogers Bros.-Youngblood & Foree's Burnett 1, 1678 ft fr n and 1012 ft fr e lines of J. Lenow sur A-433, 1 mi w Nocona, top Canyon 1790 ft, lower Strawn pay 4645-56 ft, flowed natural 58 bbls. 43 gravity oil first hour and 21 bbls. fourth hour via ¾-inch tubing choke.

Young County—Henry Zweifel et al's R. L. Martin 1, 330 ft out of NWc J. Gates sur A-111, sand 2504-18 ft, gauged 11,000,000 ft gas initial.

TEXAS GULF COAST

FIRST REPORTS

Ft. Bend—Grisso Royalty Co.'s Amelia Smith 1, Arcola area, 466 ft out of the Swc of lot 4, block 7, Cochran and McClure subdivision, M. Shipman Survey.

WEST TEXAS

FIRST REPORTS

Tom Green County—Southern Cross Oil Corp's Upton & Upton 1, c sw AB&M sec 20, blk A, 15 mi e of Christoval, lcn for 5500-ft test.

Jones County—R. R. Carroll et al's C. Herndon 1, 796 ft fr n&s lines and 970 ft fr e line of sw nw sub-div 3, league 359, Goliad C. S. L. sur, surface pipe cemented.

COMPLETIONS

Mitchell County—Ajax Drl. Co.-McKague & Gregory's Schuster 1, SWc SP Ry sec 25, blk 17, top anhydrite 810 ft, top Yates 1115 ft, top brown lime 1805 ft, top solid lime 1890 ft, abnd 3508 ft.

Presidio County—Linderman Bros. Oil Corp.-J. F. Sadler et al's Bledsoe 1, near c GC&SF Sec 15, blk 351, abnd 3315 ft.

SOUTHWEST TEXAS

FIRST REPORTS

Brooks County—E. A. Graham's Adolfo Garcia 1, 330 ft w line, 2970 ft s line of share A, 2161-ac tr, La Encantada grant, lcn.

Colorado County—Mills Bennett Production Co. et al's J. M. Truchard 1, 1320 ft northerly se line, 640 ft ne line of 76-ac tr, Edward D. Corbit survey, lcn.

Duval County—Transwestern Oil Co. et al's Duval County Ranch company 16(368), 1320 ft n line, 330 ft e line, section 368, lcn.

Jim Hogg County—Humble Oil & Refining Co.'s Mestena Oil & Gas Co. 1, 2332 ft n line, 1399 ft e line S½ sec 3, Fowler and Rankin subd, Palitas Blancas gr, lcn.

Jim Wells County—Reese and Dunn's C. B. Stillwell 3-B, no detailed location.

Nueces County—Republic Natural Gas Co.'s J. C. Robertson 1, 400 ft n line, 400 ft w line of south/half, east/200-ac, blk. 3(5) Wright Lands subd, Jose Vicente Lopez de Herrera Grant, lcn.

San Patricio County—Nueces Royalty Co.'s G. V. Harris 1, 466 ft s line and 466 ft w line of lot 5, section 27, 4th addition to Taft Farm Lands, lcn.

Starr County—Banks Miller Co.'s Genario Garcia 1, 4100 ft w line, 2450 ft s line, share 5-c, por. 71, Jurisdiction de Mier survey. Ann Rinehart et al's Eugene Bowman 1, 600 ft w line, 720 ft n line of blk 10, McDonald and Campbell subd, survey 888, lcn.

Webb County—Rodney DeLange's J. V. Cuellar 1, 330 ft s line, 330 ft e line, 60-ac tr, section 134, T. & N. O. survey, lcn.

WILDCAT COMPLETIONS

Bastrop County—C. R. Franklin's Thaxton & Yarrington 2, 500 ft nw line, 156 ft sw line, 50-ac lse, J. M. Bangs survey. Top chalk at 1968 ft; 10 inch csg at 20 ft, 7 in csg at 2019 ft, abnd 2132 ft.

Jim Wells County—Arkansas Fuel Oil Co.'s Blinka 1, 466 ft n line, 467 ft w line, 173.3-ac tr, Manuel Marrera "La Tinaja de Lara" gr, 5144-56 ft, abnd 5810 ft.

Nueces County—Renwar Oil Corp.'s W. Eschberger 1, 10¾ in csg at 1002 ft; water sand 5665-73 ft, abnd 7510 ft.

San Patricio County—Maryland Corp. and F. G. Campbell's L. H. Cockerham 1, 330 ft n line and 330 ft w line of east/60-ac of lot 6, J. W. Ballard subd.; 10¾ in csg at 745 ft; sand with oil odor at 5215-45 ft, abnd 5526 ft.

Webb County—Magnolia Petroleum Co.'s Duval County Ranch Co. 1(1) 330 ft n line, 330 ft w line, blk 20, Zapata County School Lands, League 1, sticky shale 2536 ft, abnd 2535 ft.

WYOMING

FIRST REPORTS

Big Horn County—Frank S. Scott's Robertson 1, se se se 6-54n-93w, spd 14 ft and sd to finish rigging.

COMPLETIONS

Big Horn County—John H. Thomas' Government 1, sw sw se 3-54n-94w, 15 miles n of Greybull, water 775-782 ft, abnd 800 ft.

Lincoln County—Mazel Skilfield's 1, cwl ne ne 32-19n-116w, 9 mi s Kemmerer, abnd 400 ft.

SOUTH LOUISIANA

FIRST REPORTS

Cameron—Humble's Cameron Parish School Board 1, Chalkley area, center nw se Section 16-12s-6w, lcn.

Orleans—W. T. Burton's L. & N. R. R. 3, 300 ft n, 300 ft e of swc Section 25-11s-14e, 2 mi n of No. 1, lcn.

COMPLETIONS

Orleans—W. T. Burton's Faubourg de Monteluzin B-2, in Lake Pontchartrain, 11s-13e, salt water sands 10,680 ft, abn.

West Baton Rouge—Humble's Levert 1, 1000 ft nw of Batture and 1000 ft sw line of Section 5-8s-12e, abn 8000 ft.

Shreveport, La.—Ten drilling permits were issued last week by the Louisiana Conservation Commission of which 5 were in North Louisiana, 4 being in Caddo Parish and 1 in Union Parish. The 5 in South Louisiana were in the following parishes: Beauregard, 1; East Baton Rouge, 2; Iberia, 1; and Iberville, 1.

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HERE ARE 10 GOOD REASONS WHY:

- Broad faced inserts eliminate scarring of drill pipe and casing.
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- Broad area of backs protects rotary master bushing against cutting.
- Even distribution of load over entire gripping surface is assured because each insert is individually anchored to slip segment.
- Easily dismantled and serviced right on the derrick floor, eliminating machine shop overhaul.
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- Light weight keeps excess lifting burden off of roughnecks.
- Costs are reduced since, by changing inserts, several pipe sizes can be handled with one set of segments.

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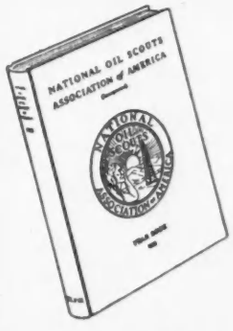
KINZBACH



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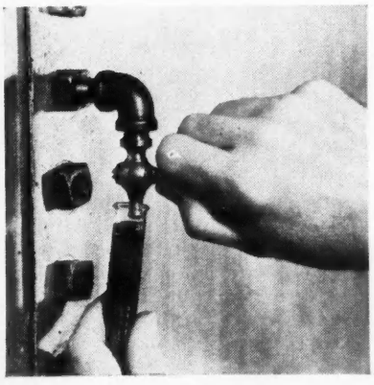
MOLY

NOTES FOR THE Equipment Buyer and User

Bolt Sample Cock

BLACK, SIVALLS & BRYSON

Black, Sivalls & Bryson, Inc., Oklahoma City, has developed a bolt sample petcock to be inserted into any vertical seam during the erection of a tank, to permit samples to be taken from the tank at any desired level.



Bolt Sample Cock

Big brother to this sample cock is the patch bolt cock which can be inserted after the tank has been erected. This "patch cock" can be installed in any vertical seam bolt-hole without entering the tank. It is tightened up from the outside by two small wrenches.

Air Release, Vacuum Valve

CHARLES F. HUDSON

The Hudson combination automatic air release and vacuum valve, manufactured by Charles F. Hudson, Electra, Texas, releases air and gas from pipe lines so that the oil may be handled with greater ease. All working parts of the valve are made of non-corrosive stainless steel.

The following claims are made for the valve:

Automatically releases air, vapor gas lock from gathering lines, retaining oil and permitting same to flow more freely.

Automatically releases air or gas from suction lines of main line stations thereby eliminating surge, pounding, major breakages, valve trouble, packing and plunger wear.

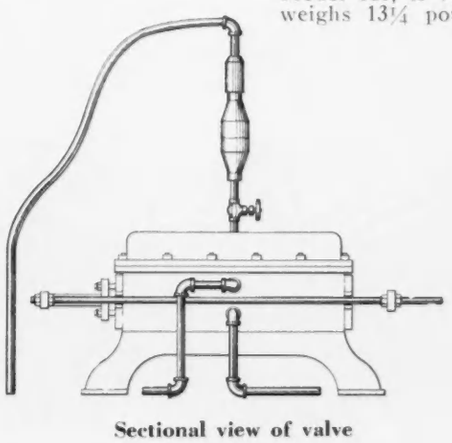
Automatically releases air from jerker and other field pumps and saves time of field gaugers and pumpers manually bleeding air from same.

Many field pumps "kick off" when gas or air accumulates and will not "pick up" or prime again unless gauger or pumper returns and manually bleeds off air. Saves packing cups and lines.

Automatically releases vapors and gases from refinery lines and pumps.

Automatically releases air from water lines and water pumps.

Installation on jerker pump



Sectional view of valve

Self-Lifting Steam Gun

OAKITE PRODUCTS, INC.

A highly improved steam gun, reported to represent a marked advance in this type equipment, has been announced by Oakite Products, Inc., 14 Thames Street, New York, N. Y.

In addition to incorporating the advantages of light weight and ease of use, the basic improvement claimed by the maker is its self-lifting feature. This new gun automatically lifts the cleaning solution from floor level to a height of over 10 feet without the aid of pumps, injectors, means of gravity feed or other auxiliary apparatus, and delivers a wet spray on the surfaces to be cleaned. All that is needed to operate the gun, according to the maker, is the necessary steam and solution hoses, steam supply and an open top drum or other easily obtainable open solution container.

To meet individual requirements, the gun is manufactured in two sizes. Equipped with an air-cooled handle, the small unit, Model 384, which is 3½ feet overall length and weighs 5¾ pounds, is designed for cleaning automobile trucks, tractors, and similar types of equipment; for cleaning machinery, equipment, floors, etc. The large unit, Model 385, is 7½ feet overall length, weighs 13¼ pounds, and is designed for use on the heaviest steam cleaning operations where a long gun is required to reach the highest parts being cleaned.

Power Slush Pump

GARDNER-DENVER COMPANY

Gardner-Denver Company, Quincy, Illinois, announces a new 7½ x 12 inch "FX" power pump for slush service.

The pump frame is of one piece semi-steel casting with integral crosshead guides and main and jackshaft bearing supports, insuring perfect alignment. Reinforced ribs are placed where stresses are greatest. Two-piece piston rod construction permits liners, pistons and rods to be changed without opening the power end. The pinion shaft, with extensions on both sides, is designed to transmit a maximum of 150 horsepower through the continuous tooth type herringbone pinion and main gear.

Automatic flood lubrication is used. Oil is contained in the reservoir in the main crankcase, the main gear being partly submerged. The fluid end is of the divided fluid cylinder valve pot type and is cast of a special alloy iron mixture. Liners are of the removable type and the piston rods are of special alloy metal. Duo-seat top and bottom guided type fluid valves are used.

The equipment includes the surge chamber and a complete set of necessary special wrenches. Steel skids, liner pullers and seat pullers are not furnished as standard equipment.

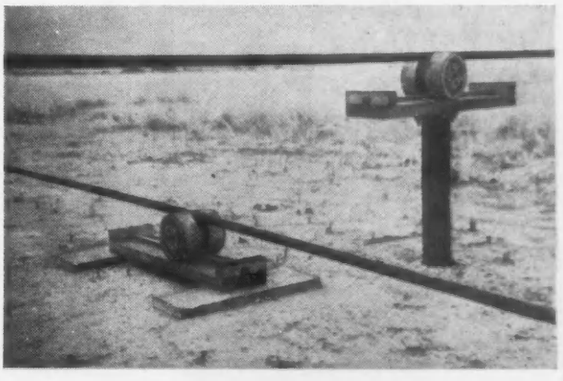
Rod Line Carriers

THE SISK COMPANY

Trakrol Rod Line Carriers have been announced by The Sisk Company, Wichita Falls, Texas. These rod line carriers operate without lubrication and servicing. They may be installed on stakes of different height or on the ground, which allows them to adjust differences in elevation.

The manufacturer claims small drag friction, chatter, flopping or breakage, and a smooth well stroke. It is said rain or sand will not injure them.

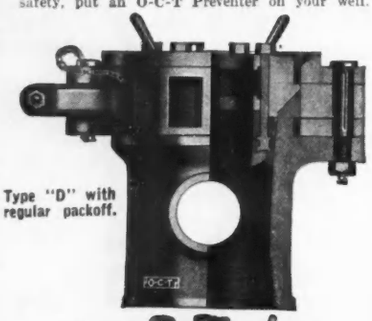
Trakrol is of oil-treated hardwood



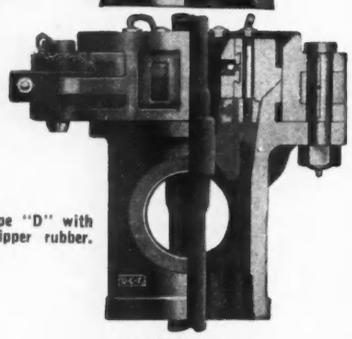
Trakrol Rod Line Carrier

RESULTS COUNT!

An O-C-T type "D" Blowout Preventer with stripper rubber, installed on a deep Louisiana Gulf Coast well, allowed the operator to rotate and run drill pipe to bottom while killing the well against 2700 pounds pressure. For maximum safety, put an O-C-T Preventer on your well.



Type "D" with regular packoff.



Type "D" with stripper rubber.

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NOBS COMPOSITION CUPS

NOTES FOR THE Equipment Buyer and User

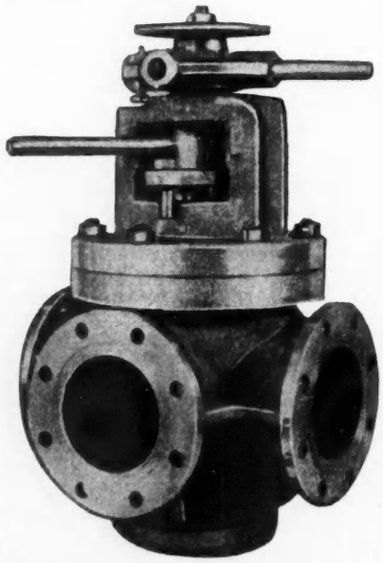
construction, and is furnished in several sizes for different rod diameters and strokes.

These rod line carriers are mounted on pipe stakes by driving the bracket furnished with a heavy hammer into the stake until tight with the bolting ears aligned with the rod line. The track is then fastened to the bracket with carriage bolts furnished. They are mounted on the ground by nailing to slats at each end.

Three-Way Brass Valve

HOMESTEAD VALVE MANUFACTURING COMPANY

Homestead Valve Manufacturing Company, Coraopolis, Pa., has developed a new line of three-way brass easy-turn lift-plug valves for use on air, water, oil and gas service at working pressures up to 150 pounds and temperatures below 400° F.



Homestead Three-Way Brass Valve

The valves are available in sizes from 1¼ to 3½-inch, and with three different styles of port arrangement—Style D which permits flow from either end and out the side opening, or vice versa; Style E which permits flow from the left hand end and out the side opening or straight through; and Style F which permits flow from the right hand end and out the side opening, or straight through.

Direction of flow is changed by a quarter-turn of the operating lever. The powerful leverage and screw of the lift-plug feature not only assures easy operation, but permits the plug to be sealed in the body in either of its two extreme positions of travel or in a mid-position so that all ports are closed, the manufacturer reports.

Paraffin Scraper

AXELSON MANUFACTURING COMPANY

The Axelson Guide Type Paraffin Scraper Coupling is being manufactured by Axelson Manufacturing Company, Los Angeles, California. The design of the coupling permits it to be hooked on the rod string without interfering with normal operations in any way. Spiral flutes form a continuous bearing surface and permit sufficient fluid passage. Paraffin is expelled by the turbulent action set up by the spiral flutes. A scraper coupling installed at every fifth joint on the rod string is recommended.

Ideal Rotary Chain

THE NATIONAL SUPPLY COMPANY

Recent surveys of maintenance expense on rotary drilling outfits indicate that chain ranks third among all items of replacement cost. Since wear is the principal cause, any means of furnishing greater wear resistance in chains is obviously quite important. Ideal Type "G" Rotary Chain, which has just been placed on the market by The National Supply Company, is designed especially to provide longer wear in a chain for average depth requirements.

It is lighter in weight and correspondingly lower in price than the deep-well heavy duty Ideal Type "F" Spiraloy Chain. Nevertheless parts subject to wear are likewise made from chrome nickel alloy steel, selected and heat treated for maximum wear resistance. Also the same precise manufacturing methods and efficient utilization of lubricant assure conditions favorable to longer service.

The Ideal Type "G" chain is made to the established API dimensional standards in two sizes; API No. 3—48,000 pounds ultimate strength, and API No. 4—112,000 pounds ultimate strength.

Ideal Rotary Chain

NOTES FOR THE Equipment Buyer and User

Cementing Collar

BAKER OIL TOOLS, INC.

To provide for two-stage cementing jobs where the lower stage is above the shoe, a new design of float collar has been developed by Baker Oil Tools, Inc., of Huntington Park, California. This device is the Baker Duplex Cement Whirler Float Collar with solid bottom baffle, with metal "Petal" basket. Since it provides for placement of the cement through tubing or drill pipe, it is also particularly adapted to single cement jobs above the shoe where pressure is needed to break circulation or place cement without putting strain on the pipe. When a second stage of cementing is to be done above the collar, the new Baker Whirler Bridging Collar is placed in the string at the bottom of this upper stage.

Baker Cement Collar

The Baker Duplex Cement Whirler Float Collar contains a ball type back-pressure valve which is embedded in a concrete plug that forms a solid baffle in the pipe below the valve. Leading off from the valve chamber are ports over the outer ends of which are baffle plates to direct fluid or cement slurry in a whirling motion as it is forced out of the collar. The valve cage extends upward to the top of the concrete plug where it is equipped with left-hand, square threads into which the cementing strig is screwed.

The cementing is done through a string of tubing or drill pipe on the bottom of which is a Baker Circulation Joint and Bottom Sub, the latter having left-hand, square threads corresponding to those in the Duplex Collar. This cementing string is run in and screwed into the collar after the liner or casing has been landed in the well. Circulation is broken and the cement pumped down the tubing, being forced out the whirler ports by the solid baffle below the ports. As soon as the cement is in place the cementing string is unscrewed and removed from the well, being flushed out when disengaged to avoid any possibility of sticking.

For the second stage of cementing the Baker Whirler Bridging Collar is used. This consists of a whirler collar below which is a seat for a bridging ball. The seat is made of Bakelite and is embedded in a concrete plug through which is an opening large enough to pass the cementing string used to cement the lower stage. After the cementing string has been withdrawn upon completion of the lower stage, the bridging ball is dropped down the pipe and forms a bridge in the casing or liner, forcing the cement when pumped down, to pass out the whirler ports in the collar. Cement for this stage can be placed by the conventional plug method or by means of a cement retainer.

Both the Duplex Collar and the Whirler Bridging Collar are generally equipped with metal "petal" baskets (and the top of the blank section of pipe being cemented frequently is equipped with inverted baskets) to protect the perforations and formations below and above the cement jobs.

Emergency Jack

TEMPLETON, KENLY & COMPANY

Templeton, Kenly & Company, Chicago, has started production on an improved model of its No. 310 15-ton emergency jack, to be designated No. 310A.

This new jack embodies 10 improvements, several of which are exclusive features, the maker states. They include:

One inch greater lift, a total of 14 inches; 37 percent easier lifting; triple-toothed lifting and retaining pawls; greater overload capacity by actual hydraulic press test; jack base area increased 10 square inches; rack bar toe lift increased to over 2 square inches; load may be raised or lowered full limit of the rack bar when working at an angle; base locking hook can now be disengaged or engaged by the operator's foot; more convenient carrying handles; and greater rack bar gib slide bearing.

No. 310A is furnished with a 5-foot steel chain, a forged steel auxiliary shoe and a 5-foot heat treated lever bar.

Templeton, Kenly Emergency Jack

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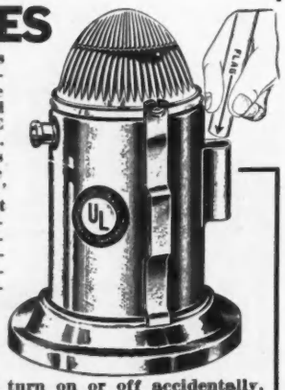
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NOTES FOR THE Equipment Buyer and User

Open Oil Field Branch at Salem, Illinois

The Salem, Illinois, oil field headquarters of the John Fabick Tractor Company, "Caterpillar's" St. Louis distributor, were opened Thursday, January 12, with neighboring distributors, oil men and the company's sales and service executives attending. More than 1000 were present as the guests of the Messrs. John Fabick, Senior and Junior, who, with the branch staff, were hosts.

The program included a Diesel show presented by factory representatives. Open house, a barbecue luncheon and a general inspection of the new facilities followed. The company's new industrial films were also shown.

The headquarters is located on U. S. Route 50 at the west side of the city. It was set up to serve the southern Illinois oil fields. Of modern construction, the building is 100x40 feet, and contains a large office, comfortable lounge for visiting oil men, sleeping quarters, large parts rooms and a well-equipped service shop.

Open and lighted throughout day and night, swift service is emphasized by the management. Dual telephone service and a teletype machine have been installed. Machine service is in charge of Jim Herrick, and his staff includes four factory-trained men having much shop and field experience, two having been brought to Salem from the Oklahoma oil fields.

Russell Goin will handle oil field sales, and Charles Misner has been named parts manager. A complete stock of Diesel engines, tractors, allied equipment including LeTourneau, Willamette-Hyster, LaPlant-Choate and Trackson products are available, and arrangements for complete cooperation from oil well equipment houses in the area have been completed. The strategic location of the branch makes for speedy service and deliveries throughout the oil fields.

Attending the opening of the new oil field branch of the John Fabick Tractor Company at Salem, Illinois, were three officials from Caterpillar Tractor Company. Left to right, they are: H. B. McKinley, assistant treasurer; John Fabick, the company's St. Louis distributor; C. M. Burdette, "Caterpillar" central division sales manager, and Gail Spain, the company's sales development manager.

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Squeaks from the Bull Wheel

No Show

First Wrestler: How come you called off your match with me last week?

Second Wrestler: I had a terrible sore throat and couldn't groan above a whisper.

Another Worry

"Now, don't worry about your wife. You'll have a different woman when she gets back from the hospital."

"But what if she finds it out, Doc?"

Full Information

"If you'll give me your telephone number, I'll call you up some time."

"It's in the book."

"Fine! And what's your name?"

"That's in the book, too!"

Soft

"When I sing, I get tears in my eyes. What can I do to stop that?"

"Try stuffing cotton in your ears."

Modest

"Did any one in your family ever make a brilliant marriage?"

"Only my wife."

Wrong Diagnosis

Doctor: "Did you tell the young man that I think he's no good?"

Daughter: "Yes, dad, but that didn't faze him. He said it wasn't the first wrong diagnosis you made."

One Remedy

First Steno: "Gee but isn't the boss cranky this morning?"

Second: "Yes, I'll have to go in and sit on him."

Modest

"What is your age, madam?"

"Twenty-two years and some months."

"Just how many months?"

"A hundred and twenty."

Absent Minded

She: "What does 'davenport' suggest to you?"

He: "A city in Iowa."

Mistaken Identity

She was a big, strong woman, and the burglar she had tackled bore unmistakable signs of punishment as the police arrived.

Justice of the Peace: "It was very brave of you, lady, to risk your life and to set upon the burglar and capture him; but you did not need to blacken both his eyes and knock all his teeth out, did you?"

Woman (looking very indignant): "How was I to know it was a burglar? I had been waiting up for my husband for three hours, and in the dark, and I thought it was him."

Candid Answer

"You're dancing with me tonight and I suppose tomorrow you'll be making a date with some other man."

"Yes, with my chiropodist."

The Good Old Way

"Couldn't this case have been settled out of court?"

"Yer honor, shure an' that is exactly what we wuz thryin' to do whin a couple av police butted in."

Encore, Please

"I'd like to have your daughter's hand, sir."

"What is your profession, young man?"

"Why, I'm an actor, sir."

"Well, get out before the footlights."

The Pacifists

"Did you protest aginst the movie that represented the Irish as disorderly?"

"Did we? We wrecked the place."

Not Frightening Enough

Farmer Hawkins was complaining to his wife that he could find no old clothes to put on the scarecrow.

"Well," said she helpfully, "there's that flashy suit son wore at college last year."

"Yeah but I want to scare the crows, not make 'em laugh."

Not So Gullible

"I'd like some soap, please."

"Certainly, madam, we have just the thing for a delicate peach blossom complexion such as yours and—"

"Oh, it isn't soft soap I want."

Junior Scores

"Auntie won't kiss you with that dirty face!"

"That's what I figured."

All's Well

"Are you and your wife on speaking terms?"

"Well, I'm listening again."

Easily Misunderstood

Mrs. Schwartz had been invited to her sister's home for a weekend. She was considerably puzzled as to what to do about her cat, until finally she had a bright idea. She left the following note under her neighbor's door:

"Dear Mrs. Samuels: Would you please put out a little food each day for my cat. It will eat almost anything, but don't put yourself out."

Taking No Chances

A judge, failing of reelection, was made cashier of a local bank. A man presented a check to be cashed.

"Don't know you," greeted the new cashier.

The customer produced a credit card, a business card, and a lot of letters addressed to himself.

"Not sufficient identity," said the cashier, pushing the check back.

"Why, Judge," protested the man, "I've known you to hang a man on less evidence than that."

"That may be," said the judge, "but when you're paying out money you have to be careful."

Decision Reversed

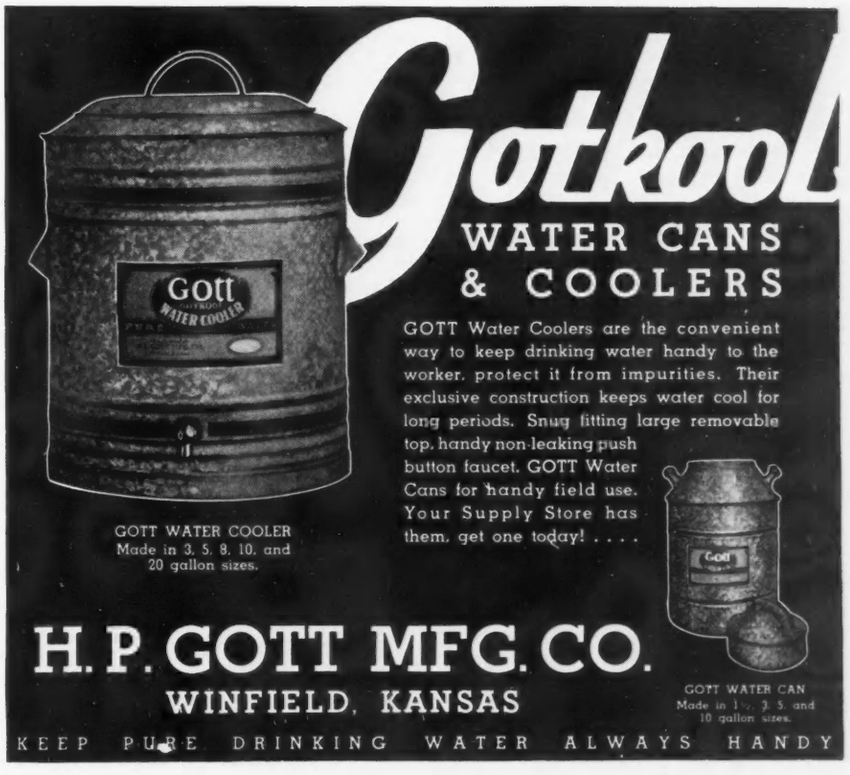
"I thought I issued an injunction against that young Tully coming here."

"I know you did, Dad, but he's a lawyer, so he appealed to a higher court, and mother reversed your decision."

So Unselfish

"Unselfishness means going without something you need, voluntarily. Can you give me an example of that, Bobby?"

"Yessum. Sometimes I go without a bath when I need one."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